



Social and Emotional Aspects of Learning



Editor:
Sanna Järvelä

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PREFACE

Understanding learning has always been the goal of educational research. However, *how* one understands learning has changed over time as research on the psychology of learning and other relevant areas has developed. The purpose of this section '*Social and emotional aspects of learning*' is to present some core issues and recent developments in the field of social and emotional aspects of learning. Understanding the interrelationships of emotional, social, and cognitive processes forms the core of individual competence building. The affective reactions people have in response to positive and negative outcomes in different settings reflect an investment in both attaining and avoiding competence.

This section provides the readers with means for understanding future learning competences, since the development of socioemotional strengths will become increasingly important in a rapidly changing society that demands coping with multiple challenges, stressful situations, and competing goals. Entries have been prepared for a broad readership, including advanced undergraduates, graduate students, working professionals in allied fields, parents, and researchers in their own disciplines. The different entries in this section provide an understanding of the basic processes of social and emotional aspects of learning, and also perspectives for understanding increasingly dynamic social learning environments and their socioemotional challenges.

The section focuses on four themes: motivation in learning, emotional experiences, social interaction, and self-regulatory processes and social relations in multiple learning environments. In the first section, the authors consider the core concepts of motivation in learning, such as interest, attributions, intrinsic and extrinsic motivation, and achievement goals and flow, but the entries also cover the recent ideas of how culture and social contexts contribute to our understanding of motivation. The second section highlights the current understanding and importance of emotions in learning. The authors pay special attention to various kinds of emotional experiences, while focusing also on how social context informs emotional responses to cognition and learning. In the third section, the authors go in detail about the role of social interaction in learning and its forms in a variety of learning contexts. The entries deal with the main issues of social interaction, peer learning, and peer relations as well recent ideas on collaborative learning. The fourth section covers self-regulatory processes exploring different facets of self-regulation from self-concept to self-regulatory processes. The authors in their entries show how self-regulatory processes may be seen as the means through which people pursue and attain competence, and they may also be seen as competencies in and of themselves. Finally, in the last section social and emotional aspects of learning are carried further as the entries consider a variety of social relations and learning interactions in multiple learning environments.

Finally, I hope that the readers will find this section as enlightening and inspiring as I do. The international group of experts has generated theoretically strong and future-oriented perspectives on the social and emotional aspects of learning.

Sanna Järvelä
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MOTIVATION IN LEARNING

Interest

Attribution Theory

Intrinsic and Extrinsic Motivation

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Culture in Motivation Research: A Challenging and Enriching Contribution

Motivating Students in Classrooms

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Interest

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Glossary

Avatar/animated pedagogical agent – An agent within a computer game or simulation; in game environments avatars are usually the players game character; in learning software animated pedagogical agents are humanoid assistants or animated characters who facilitate learning.

Deep processing strategies – Processing strategies that require transformation and elaboration of learning material; require more processing effort than strategies relying solely on rote memory or surface processing.

Engagement – Connection and involvement; used to denote active, positive connection with schooling; task engagement; school engagement; distinctions made between behavioural, cognitive and affective engagement.

Mastery achievement goals – Learning goals where the purpose is to improve skills, achieve understanding, or expand competencies; cf, performance achievement goals.

Seductive details – Task information or details that students find highly interesting but which is not part of the important information content of a task.

Seeking system – An evolutionary emotional brain system that gears the animal for goal seeking action including exploration and information seeking; interest is an expression of this system (see Panksepp, 2000).

Self-regulated learning – Learning that is controlled and regulated by the learner; a self-regulated learner has clear learning goals, monitors progress toward achievement of their goals, and reflects on the quality of their own learning achievements.

Trait curiosity – Curiosity from the perspective of an individual disposition or personality trait; distinguishing between individuals on the basis of their typical style of reaction to novel and puzzling phenomena; cf, state curiosity.

Two complementary perspectives on interest were identified and this distinction has formed the basis for most of the research and thinking on the nature of interest and the role it plays in learning and development. Hidi's review article was followed up in 1992 with a volume that presented a collection of the major writers and researchers who were addressing the issue of interest and its contribution to learning (Renninger *et al.*, 1992). Another significant feature of this volume was the bringing together of researchers from around the world. The work emanating from the school of German researchers (Hans Schiefelé and Erhardt Todt) with their person–object (POI) model of interest was presented alongside work that had been growing in the US and Canada. What followed has been an intense research focus on the characteristics of interest and its role in learning.

Interestingly, the resurgence in attention to the role of interest in learning and development claimed heritage from Dewey's writings in the early twentieth century. For example, in *Interest and Effort in Education* Dewey wrote: "the root idea of the term seems to be that of being engaged, engrossed, or entirely taken up with some activity because of its recognized worth" (1913 cited Boydston, 1979, p. 160); another work referred to interest as the "vital union between the student and his study" (p. 253). Berlyne's work in the 1940s and 1950s was another important influence on the development of ways of thinking about interest. Berlyne defined three ways in which the term interest was used in psychology: a state of the organism, a quality of the stimulus, and a relation between organism and stimulus (Berlyne, 1949). As will become clear, each of these has in some way influenced current thinking. We will consider current perspectives on interest by focusing on the three most widely used perspectives; interest as psychological state, situational interest, and individual interest.

The Character of Interest

What exactly does interest mean? One of the simplest ways to represent the range of usage of interest terminology is to look at the level of generality in the behavior mentioned. At the most specific level, interest refers to a psychological state in which attention is focused on a particular object or event. For example, a student has her gaze fixed in concentrated attention on a computer screen where she has just discovered a website showing the first images of a newly discovered planet. Close observation reveals that

A couple of years prior to the publication of the last volume of the encyclopedia, Suzanne Hidi published a seminal paper describing interest as a mental resource for learning (Hidi, 1990). Although Hidi was not the only person writing about interest at that time, her paper struck a chord in the educational community and is widely cited.

she is absorbed by what is in front of her and as we watch she continues to explore the website and other images of the planet, ignoring the conversation of her friends at the next table. In this example, we are witnessing interest as a state and this phenomenon raises a number of questions that contemporary research programs are addressing. What specific processes are involved? What function does it serve in learning and achievement?

Interest as State

The state of interest has been shown to involve positive affect. There is still some debate over whether this state of positive affect is an emotion. Some current neuropsychological theories of emotion suggest that interest is the information-seeking strand of a basic seeking system (Panksepp, 2000). We know that positive affect is an important element in the state of interest and that it may also be accompanied by other feelings which are not necessarily positive. For instance, most people can appreciate the mix of positive and negative affect associated with students watching their first animal dissection in biology classes. The state of interest is predictive of persistence, exploratory, or information-seeking activity, and has been shown to be associated with knowledge acquisition and performance. Interest is a dynamic state and so can be expected to change over relatively short periods of time. Students' persistence with curriculum tasks often depends on whether the task sustains interest. When interest in a task is sustained or even increased, students are more likely to persist with the task and show higher levels of learning and performance.

Situational Interest

Shifting the lens slightly directs the focus to the character of interest as determined by sources or factors that trigger interest. Specific kinds of events or contextual factors can trigger a state of interest and, when triggered in this way, interest has been referred to as situational interest. The young female student described above happened upon the planet images by chance. She was searching for a site on the Internet featuring a popular music group and happened to click on the planet link by chance. Immediately, her attention was caught by the colorful swirls of the orbiting planet and she investigated it further. Her interest in the planet is appropriately described as situational interest.

Situational interest can be triggered by a wide range of environmental events. Physical properties of an event, such as change, novelty, ambiguity, and uncertainty, have all been linked with the triggering of situational interest. This fact has often been used in educational settings to engage students with curriculum tasks. It is clear from a large number of research findings that interactive

computers and digital information can be used to trigger situational interest in a variety of tasks for a wide range of students. In relation to learning and development, the problem then becomes one of holding or sustaining students' interest so that they engage with the learning content. There is no doubt that the new medium captures interest of the students. However, very often that interest rapidly wanes, and often disappears when what follows does not match the enticing first impressions. The interest triggered by the swirling color and movement of the planet in orbit is likely to dissipate if our student is reminded of her intention to find the music group's website.

A substantial proportion of the research on situational interest has investigated the influence of interest on reading text. General findings provide clear evidence of a significant effect of interest on performance indicators, for example, comprehension and recall of text information. It is also well documented that interest affects deeper processing as shown by scores on learning measures that require processes such as elaboration, transfer, or application of information to a new setting. These effects imply that techniques for increasing situational interest might be employed to improve learning outcomes. There are a number of text features that can be used to influence situational interest. Structural features of the text, such as novelty, coherence, ease of comprehension, and vividness, can be modified to increase interest. At an individual level, personally meaningful or valued content can be used to increase interest, while at the broader group level, themes of universal personal significance (e.g., life, death, or sex), sometimes referred to as absolute interests, have predictable effects on interest (Schraw and Lehman, 2001; Wade, 2001).

While providing some guidance for teachers, there are also some cautions to be heeded. When not connected to the important informational content of the text these themes may take on the character of seductive details. Rather than improving performance they may interfere with it by diverting attention away from significant text themes and meaning. It is when interest and important text elements coincide that interest has a positive influence on learning. Similar findings have been reported in other learning domains, for example, learning from science texts and learning with multimedia resources.

Individual Interest

At a more general behavioral level, personal or individual interests have been identified as an important type of interest that influences students' learning. Individual interests are predispositions or trait-like personal organizations that have been developed over time. A topic, a domain, a school subject, or a type of activity, may each become the object or content of an individual interest. For example, a second young student has also landed on the website displaying the first images of the new planet. He also

shows the unmistakable signs of experiencing interest; his demeanor leaves no doubt that he is enjoying what he is seeing. His attention is concentrated on the screen and he looks as if he will be glued to that website for some time. However, the interest being observed in this student is different from that of the young girl who discovered the planet images by accident. This student came to the site with a well-developed interest in astronomy. He had heard that the images of the new planet had just been released and was eager to check them out. From as early as 6 years of age, he was attracted to pictures of planets, has learnt their names, and details of their composition and orbits. Hence, although displaying a similar state in response to the images of the new planet, his interest is different. He is seeking different kinds of information about the new planet, information that will expand his already well-developed knowledge of the universe. Hence, the characteristics of individual interest, sometimes referred to as personal interest, are that there is a well-developed personal organization of knowledge, value, and affect. Our astronomy enthusiast has a well-structured core of knowledge about the domain. The subject is important to him and his feelings, when pursuing his interest, are likely to include some or all of fascination, excitement, enjoyment, surprise, wonder, and delight.

Clearly, when the object of interest is a school domain or has close links with a school domain, problems of motivation and engagement or problems with achievement outcomes are likely to be minimal. But by the same token, when individual interest in school domains is lacking or is lower than required for effective learning, this is soon reflected in low achievement levels and lack of motivation. It is well documented that in many developed countries significant numbers of young adolescent students are showing low interest in schooling domains. Awareness of this problem has prompted questions concerning the development of individual interest which will be taken up in a later section.

Vocational Interests

One form of interest, not yet considered in this article, concerns interest at a level more general than individual interest – generic interests. These interests are the broad personal organizations of preferences for types of activities and experiences that constitute vocational interests. Vocational interests are generally treated as personality traits. They can be observed in children's preferences early in their schooling and function as organizing themes in the way children and adolescents react to new situations, to people and to tasks (Betz and Borgen, 2000). Holland's classification of vocational interests into realistic, investigative, artistic, social, enterprising, and conventional (RIASEC) themes is used in a wide range of research and in practical settings as a model of vocational

interests. In the same way that individual interests develop through experience over time, it has been proposed that vocational interests are based on two main forms of self perceptions that accrue over time. These are individuals' self-perceptions of efficacy or confidence in relation to pursuing tasks and activities, and their perceptions of the likely outcomes of those tasks and activities. Schooling experiences at all levels contribute to and consolidate students' vocational interests.

Development of Interest

How interest in schooling domains develops is central to educational philosophy and practice. If interest, in any or all of its forms, is a key component of learning as our review suggests, then understanding the factors that initiate and support the development of interest are essential for successful educational outcomes. This question has come to prominence recently and a number of models of interest development have been proposed. All emphasize an important role of experience in supporting the development of interest. Hidi and Renninger (2006) have proposed a four-phase model of interest development that identifies a sequence which begins with the triggering of situational interest by a specific feature of the environment. When this or similar experiences occur a number of times, the situational interest is maintained or strengthened. External support, for example in the form of teacher encouragement, is important at this stage of interest development. Further experiences over time strengthen and deepen the intrapersonal organization of thinking and feelings associated with the activity. By now, a wider range of similar activities or even a broader domain has become the content of the interest. It has progressed through phases of being an emergent individual interest to being a well-developed individual interest with stronger and deeper knowledge, value, and feeling components. Although still responsive to external support, it is not essential at this stage. If we go back to the two students who were observing planet images on the computer screen, we can locate them at different positions in their development of an interest in the solar system. The young girl who happened on the planet images by chance would be identified as being at the earliest phase, a triggered situational interest. This may be the start of a new interest or it may be an event that is never repeated and her interest in the solar system may go no further. On the other hand, the young boy already has a well-developed interest in the solar system and his experience is about consolidating and extending his knowledge within that domain.

A three-stage model of development from situational to individual interest (situational interest, a stabilized situational interest, and an individual interest) based on

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the POI theory of interest (Krapp, 2003) has also been advanced. This theory is used to map developmental trajectories of interest, especially in relation to schooling domains and to explore the basis for the typically lower levels of interest in school that occur as students move from childhood to early adolescence.

Gender patterns of interest development have also been investigated. Besides showing specific relationships with school subjects domains, gender patterns of interest have also been shown to influence the way students respond to specific topics within school subjects and to ways that topics are presented. These patterns have important implications for teachers. For example, in physics classes it has been shown that the interest levels of boys and girls are influenced by the way that physics topics are presented. When learning the principles of a pump, girls showed higher levels of interest when the topic was pumping the blood around the human body than when the topic was pumping gas out of the ground (Hoffmann and Haussler, 1998). These findings raise a number of important questions for educators and researchers. What are the limits to this approach? Can all of the physics content that is important in a school curriculum be presented in ways that trigger interest for all students? Can interest triggered in this way provide the basis for the development of individual interest in physics, sufficient to sustain further exploration and involvement with a wide range of physics concepts and topics?

Yet, another perspective on interest development focuses on its contribution to knowledge acquisition and the development of expertise in specific domains. Alexander (2004) links situational and individual interest to different stages in a model of domain learning (MDL) that describes the trajectory from novice to expert. At the novice stage, situational interest supports knowledge and skill acquisition. However, later in the knowledge-development sequence individual interest in conjunction with deep-processing strategies is more likely to support development of skill and expertise.

These models signal the potential of interest theory and research to contribute to understanding how students learn and to identify how teachers might use their understanding of interest processes to support and deepen students' learning.

Interest and Related Motivational Concepts

Interest is only one of a number of motivational concepts currently being researched and some comment is needed on the place of interest among motivation concepts. Most commonly, interest is grouped with concepts such as engagement, curiosity, flow, and intrinsic motivation.

All refer in some way to students becoming involved with an activity such that they are focused on the task or activity for its own sake rather than simply as a means to some other end outside of the task. In education, the contrast is drawn between interest in the activity (intrinsic motivation) and working on the activity to achieve some external end, such as a high grade, or to receive some form of praise (extrinsic motivation). One significant direction in contemporary thinking on motivation is the articulation of how these concepts contribute to self-regulated learning. Hence, an important question in relation to interest is an understanding of how it is related to the many processes that contribute to adaptive, self-regulated learning.

Self-regulated learning has been defined in terms of the processes whereby personal learning goals are translated into action. While there are a number of specific models of self-regulated learning, they all imply a sequence from activation and task planning, to monitoring and control of on-task behavior, and finally reflective evaluation of task outcomes. Interest, whether considered from the perspective of on-task state, situational interest or individual interest, plays an important role in the sequence of processing, that is, self-regulated learning.

At the task level, the general pattern emerging is that positive orientations to learning (e.g., trait curiosity, mastery achievement goals, or individual interest in a cognate domain) make it more likely that the new task will trigger student's interest. Once interest has been triggered it is then more likely that students' will experience positive affect, will choose to persist with the task, and are more likely to use deep-processing strategies. Another self-regulatory variable that has been shown to be closely linked with the triggering of interest is self-efficacy. When students feel confident about their ability to perform the task, they are more likely to have their interest triggered.

Similar patterns of association have been shown when the research is focusing on individual interest. For example, in college students mastery achievement goals have been shown to be associated with higher levels of individual interest in the subject and this in turn is associated with further participation by choosing courses within that domain. Hence, individual interest is an important component in student engagement over extended time intervals or students' continued participation with the domain content.

Yet, another aspect of the self-regulatory function of interest is operating when students actively make a boring task interesting. It has been shown that when students are committed to continuing with a boring task, they will find ways of making the tasks interesting and in this way regulate their task motivation (Sansone and Thoman, 2005). In the next few years, investigations of exactly how these variables combine to produce effective self-regulated learning will expand our current understanding of ways to support and enhance student learning.

Measurement of Interest

In interest research, as with many areas of educational processes, there is a great reliance on questionnaire measures and this is likely to continue to be an appropriate way to measure individual interest and vocational interests. However, recent developments especially in the measurement of the state of interest are capitalizing on the potential of interactive computer technologies in innovative ways. For example, measures inserted into a task requiring a quick response and minimal interruption to the flow of the task are being used to monitor how the state of interest changes across a task. Using these techniques with reading tasks, it has been demonstrated that gender interacts with text topic to influence whether interest is maintained or extinguished across the course of reading passages of narrative and expository text. Using interactive technologies, complex problem scenarios from domains such as mathematics, social issues, and biology, have been used to identify complex relationships between sets of motivational characteristics (including interest) and to determine how they function in sequences of task behavior connecting persistence, processing strategies, and performance. Simultaneously, these new technologies are also being investigated as a medium for learning and their impact on students' interest in their learning is one of the important factors being addressed.

Educational Technologies and Interest

Part of the appeal of using modern informational technologies as an instructional medium is the often reported observation that students find this medium, more interesting. The assumption is then that students will learn more effectively using modern information technology than when using more traditional media. This assumption has been tested in research comparing information technology and more traditional instructional media (e.g., textbooks) and a number of important findings have been reported. There is no doubt that many of the features of multimedia presentations that are possible by using the latest information technology trigger student interest. Complex combinations of color, movement, and sound have a powerful effect on students. Interest is triggered and in the same way as our earlier student had her interest triggered by the color and movement of the planet images, instructional materials that make use of the potential of new information technologies have a ready audience. At one level, the state of interest is a response to novelty. Interest is triggered and the students' attention is focused on the novel event. However, this effect is short lived and the student is then prey to the next novel event that triggers their interest.

It has been widely shown that students will engage further with the instructional content, that is, their interest will be sustained if what follows the initial novel experience is personally meaningful. However, what is personally meaningful will vary according to the age and experience of students. Instructional content that builds on students' personal or individual interests is likely to sustain the interest initially triggered by the novel medium. As with the research on student interest and text learning, the introduction of seductive details into the multimedia instructional content to hold interest has a harmful rather than beneficial effect on learning. Using scientific text material supported with graphics, it has been demonstrated that seductive details function by diverting the reader. Seductive details prime the student by bringing to mind prior knowledge that is not the main content of the task which then guides selection and organization of new content. In this way, important content is likely to be overlooked (Harp and Mayer, 1998).

On the other hand, some features of new technologies have the potential to improve learning through their effects on student interest. For example, instructional systems have incorporated social agents (referred to as avatars or animated pedagogical agents) who support students' learning. When students reach a plateau in their problem solving, the social agent becomes active and through utterances and/or actions they provide scaffolds for the student's learning. One of the ways this facilitation effect operates is through an increase in students' interest in the task (Moreno *et al.*, 2000). With the rapid expansion in use of information technology, the role of interest as one of the important processes underlying the effectiveness of these technologies in student learning will be a priority question for further investigation.

The Next Decades of Interest Research

The relationship between interest and academic achievement has been referred to a number of times in this article. Although there is variability across studies using different learning domains, different students, and different schooling levels, interest typically accounts for approximately 10–15% of the variation in achievement. It is also clear that interest is associated with deeper processing. As has already been suggested, the next decades are likely to see increased attention on the ways that interest processes combine with other motivational variables to contribute to effective self-regulated learning. In addition, modern information technologies will continue to expand our knowledge of how interest processes can support students' learning as well as being an important tool for learning.

See also: Affect, Mood and Emotions; Emotion in Educational Contexts; Flow in Education; Intrinsic and

Extrinsic Motivation; Motivating Students in Classrooms; Motivation Regulation; Self-Efficacy Beliefs; Volitional Control of Learning.

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Attribution Theory

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An amalgam of assumptions, beliefs, data, hypotheses, and theories related to phenomenal causality fall under the rubric of attribution theory. Hence, attribution theory refers to a field of inquiry rather than to a specific scientific conception. Inasmuch as the focus of study concerns inferences about the causes of events and outcomes, including achievement-related success and failure, and the consequences of these beliefs, the field of attribution is of central concern to educators. Indeed, a great deal of life in the classroom can be examined from an attribution perspective.

The origin of attribution thinking for psychology was Fritz Heider and his seminal book: *The Psychology of Interpersonal Relationships* (Heider, 1958). However, there had been a traditional philosophic interest in the study of causal reasoning and even prior to Heider a number of empirical studies were concerned with perceived causality (e.g., Michotte, 1946). Heider's contribution was relatively neglected prior to the influential attribution analyses offered by Jones and Davis (1965) and Kelley (1967). In addition to these contributions, the book *Attribution: Perceiving the Causes of Behavior* (Jones *et al.*, 1972) was also responsible for ushering in nearly two decades (1970–90) of attribution dominance in the field of social psychology. Attribution theory, often associated with naive psychology, replaced in impact the noncommon sense theory of cognitive dissonance, and subsequently was supplanted within social psychology by a focus on unconscious processes and priming. During and following its ascendancy, attributional thinking penetrated other fields of study as well, including educational psychology.

This article presents aspects of attribution thinking that are of relevance to education, confining this discussion to the perceived causes of success and failure in achievement-related contexts. In so doing, a great deal of attribution-related literature is omitted, particularly from cognitive psychology pertaining to causal reasoning, from clinical psychology related to coping and mental health, and from social psychology concerning interpersonal attitudes and behavior.

The article proceeds as follows. Initially, the perceived causes of success and failure and their underlying properties or characteristics are considered. This is followed by a presentation of some antecedents of causal beliefs, and then a more extensive examination of their cognitive, emotional, and behavioral consequences.

The Perceived Causes of Success and Failure

Explanations may be based on reasons or causes, which need to be distinguished, although this differentiation is at times murky and fraught with philosophical intricacies (see Buss, 1978). If a student is asked why he or she enrolled in a particular course, he or she might call forth reasons such as: "I need it for my major" "I heard the teacher is great" "It meets at the perfect time;" and so forth. These explanations or justifications make the choice understandable and intelligible. In explaining everyday action, people typically call forth current reasons, which are associated with incentives (costs and benefits) and volitional choice (see Malle, 2004).

Attribution theory, on the other hand, is centered on causes. Causes are invoked to explain outcomes or end results, such as success and failure, rather than actions; they are antecedents instead of (in addition to) justifications and can apply to intended or unintended outcomes and to factors that may or may not be controllable. Failing in mathematics because of perceived poor aptitude is considered here to be an attribution, or a causal antecedent, rather than a reason, while enrolling in a class to be with a friend is a reason (incentive) and is not regarded a cause.

It must also be noted that not all outcomes elicit a search for understanding and causality, for this requires cognitive work. For example, if one succeeds at a simple puzzle in the newspaper, it is unlikely that time is taken to answer the question: "Why did I succeed?" On the other hand, unexpected failure at an important task is particularly likely to give rise to a search to identify the cause (see Gendolla and Kolle, 2001). Attribution analyses thus are subsumed within cognitive functionalism in that future successful actions often depend on perceiving the causes of past failures.

What, then, are the causal ascriptions for success and failure? First, it must be remembered that attribution theory is concerned with phenomenal causality, rather than seeking the true causes. Perceived causes vary as a function of situational context. For example, the perceived causes of success and failure at sports (e.g., strength, a windy day) differ from the causes of success and failure at math (e.g., math aptitude). Math outcomes may even elicit different dominant causal beliefs (e.g., aptitude) than do performance results at a history quiz (memorization effort). Causal beliefs also vary between age groups,

cultures, and depend on whether the causal target is the self or someone else.

The potential causes of achievement-related outcomes therefore are numerous, diverse, and often idiosyncratic – one must be wary of generalizations. Nonetheless, there is a set of causal beliefs that appears in many contexts. The most common causes of success and failure are aptitude, ability (or a learned skill), immediate and long-term effort, task characteristics (such as ease or difficulty), intrinsic motivation, teacher characteristics (such as competence), mood, and luck (see Weiner, 1985, 1986). Furthermore, within this delimited list, aptitude (which is presumed here to include ability) and effort dominate causal beliefs. Hence, one succeeded because one is smart and/or tried hard, and failed due to being incompetent and/or not exerting effort. At the very heart of the contribution of attribution theory to education is a conceptual analysis of the distinction between ability and effort and the contrasting linkages of these two causal beliefs to other cognitions, emotions, and actions.

Causal Properties

Inasmuch as causes are diverse and numerous, there have been attempts to identify their underlying properties or characteristics. For example, although it is evident that ability and effort are not the same, in what ways do they differ? Progress from description to classification allows causes to be compared and contrasted quantitatively, rather than merely indicating that they differ qualitatively.

Certainly three, perhaps four, causal dimensions have been isolated (see Weiner, 1985, 1986). One characteristic of causes is their locus, or location, within or outside of the actor. This causal property is most associated with Julian Rotter (1966), the originator of the concept referred to as locus of control. The locus label grew from research on skill-versus chance-determined tasks and is most associated with a scale used to classify individuals according to their beliefs regarding personal causality. Aptitude and effort are similar in locus, both being internal to the actor (although aptitude is likely to be regarded as more internal than effort), and differ from causes such as chance or task ease, which are regarded as located in the environment, or external to the actor.

A second property on which causes can be compared and contrasted is controllability. Aptitude, which is internal to the person, is not subject to volitional control and change, whereas effort expenditure is considered subject to personal control – it could be otherwise.

Endurance or stability is the third known property of causes. Some causes, such as aptitude, are viewed as stable over time, whereas others, such as chance, are not enduring. Effort also is typically considered unstable,

although recall attribution theory deals with phenomenal causality so that labeling another lazy, or industrious, implies stability in effort expenditure.

Yet, a fourth causal characteristic relates to the globality of the cause, or the extent to which the cause generalizes across situations. For example, it could be contended that perceived general intelligence exerts an influence over a wide array of academic outcomes, whereas perceptual reasoning ability has more limited application.

All causes, then, have multiple properties and can be classified within a taxonomic system. Aptitude, for example, is internal to the actor, stable, uncontrollable, and often considered global, whereas effort also is internal to the actor, but likely believed to be unstable, controllable, and specific. In a similar manner, chance tends to be perceived as external to the actor, unstable, uncontrollable, and specific. These groupings are important because causes that differ qualitatively (e.g., aptitude and chance) may share some consequences but differ on others. For example, failing in math because of perceived lack of aptitude or due to bad luck both capture the belief that “I could not do anything about it” and give rise to the results of uncontrollable thinking. On the other hand, these causes are linked to different expectations about the likelihood of future success because ability is stable whereas luck is unstable.

Causal Antecedents

Attributional accounts of the determinants of causal beliefs have been derived from an analysis of reasoning processes. The concepts most invoked are covariation, conditional probabilities, causal rules such as necessary and sufficient causality, and the like (see Kelley, 1967). Discussions also often consider prescriptive or correct reasoning, which is contrasted to the flawed conclusions reached by the person on the street. This body of knowledge, related to epistemology, has applicability in educational settings but is not discussed in this context.

More pertinent here is a consideration of some psychologically based antecedents that give rise to causal beliefs, particularly hedonic concerns. In addition, causal determinants that involve communications from teachers to their pupils also are of central importance in educational contexts. Finally, in the following section I consider impression management techniques that attempt to alter the causal beliefs of others.

Biases in Causal Reasoning

It has been repeatedly documented that individuals overestimate themselves on virtually all positive characteristics. Just as 75% of the mothers believe that their children are in the upper 25% of the class, individuals regard themselves as

smarter, more moral, better drivers, having more common sense, and so on, than others and compared to what they really are (see Dunning *et al.*, 2004). A similar conclusion can be reached regarding causal reasoning: individuals relatively believe that they caused their own success, whereas failure was due to outside forces. This phenomenon has been given various labels, including the self-serving attribution bias, ego-enhancement, and most prominently, the hedonic bias. It is to be expected, then, that children and their parents blame the teacher or the school for failure, while the teacher holds the child and/or his or her parents responsible. Disagreement and conflict regarding the causes of success and failure are normative.

Other biases have been hypothesized and have been very popular topics for attribution research. One considered determinant of causal beliefs is labeled the actor-observer perspective. It has been suggested that actors attribute their behavior to the situation, whereas observers ascribe an action to a characteristic of the actor. For example, if I hit someone it is because that other person provoked me (situational causality), whereas when someone else acts with aggression it is because that person is hostile. Associated with this discrepancy is a dispositional bias, or the fundamental attribution error, which is the tendency to underestimate the situational influence on the behavior of others and overestimate the importance of traits or perceived characteristics of the person.

These presumed tendencies, however, are now being called into question (see Malle, 2006). One factor undermining these hypotheses is the established hedonic bias. If individuals tend to take personal credit for success, then positive behaviors will not be ascribed by the actor to the situation. On the other hand, in situations of failure, both the hedonic bias and an actor-observer discrepancy go hand in hand, with over-attribution by the actor to the situation, relative to an observer.

Teacher Communications

Teachers may inadvertently communicate causal information to their pupils. This information can be conveyed through expressed emotions, praise and blame, and help giving.

As will be elaborated later, emotions are linked with causal beliefs. Anger following the failure of another tends to be elicited by controllable causes, such as lack of effort, whereas uncontrollable causality, such as lack of aptitude, elicits sympathy. Compare, for example, parental reactions to the failure of their child due to lack of studying as opposed to being caused by a mental handicap. Teachers who express anger following failure convey to the pupils that the failure was their fault and is changeable, whereas heightened sympathy, and particularly pity, conveys "it is not your fault and nothing could have been done." Thus,

a positive or pro-social emotional expression could have negative behavioral consequences (see Graham, 1990).

In a similar manner, praise for success at an easy task, and the absence of reprimand for failure at such tasks, are cues that one has low ability. Furthermore, uncalled-for help may be a low-ability signal from a teacher. In sum, a variety of causal information regarding ability and effort has the teacher as its source.

Impression Management Techniques

It is intuitively evident that individuals do not want others to blame them for failure or untoward actions. To manipulate the causal beliefs of others, disparate impression management techniques are used. Four impression management strategies have been identified: denial, excuse, justification, and confession. In denial, the actor does not acknowledge a particular outcome (e.g., "I did not fail the test"; "I was not smoking"). This is a rather primitive technique, often used by younger children, for it can be readily disconfirmed if untrue.

A more common strategy is to provide an excuse to change causal beliefs (ex = from; cuse = cause). The actor attempts to shift the perceived controllable cause (e.g., lack of effort) to an uncontrollable one (e.g., the bus was late). In so doing, it is anticipated that blame and personal responsibility will be averted. Justification, a third identified impression management strategy, has a similar goal, although in this case allegiance to a higher moral goal is invoked ("I did not study because I had to take my father to the hospital"). Finally, confession of a misdeed is possible. In so doing, the wrongdoer acknowledges a bad behavior; however, confessing puts forth the impression that he or she is a good person who will not engage in the act in the future ("I did not study for the test; I am sorry and it will not happen again").

Teachers and their pupils at times disagree on the acceptability of various excuses and justifications. For example, pupils believe that their alarm failing to ring is a reasonable cause for missing an appointment, whereas teachers do not regard this as acceptable to promote forgiveness and lack of anger (see review in Weiner, 1995). It also is the case that some apparent excuses are truthful. However, an observer cannot conclude with any accuracy whether a student in fact missed the test because the bus was late, or had the flu, as opposed to being negligent.

Causal Consequences

Of particular relevance to educators are the consequences of causal thinking on the expectations, emotions, and behavior of pupils. These are addressed in turn.

Expectancy of Success

Motivation theorists have established that behavior is in part guided by future expectancy of success. Regardless of the intensity of a need, if the expectancy of goal attainment is low, then instrumental action directed toward that goal will not be undertaken. For example, regardless of how hungry one is, a restaurant known to be closed will not be a target of choice.

To a great extent, expectancy of future success in achievement contexts is determined by causal beliefs about the cause of prior failure. Stable or enduring causes give rise to the conviction that the future will be no different than the past. Hence, attributions of failure to lack of aptitude, an uncaring school environment, an absence of support, and so on promote expectancy of future failure. This lowers motivation and results in a tendency to leave that setting. On the other hand, ascription to changing factors provides hope that the future may differ from the past. Attribution to lack of effort, or to a teacher who is leaving, promotes positive expectations of the future inasmuch as the perceived causes of the prior failures are unstable or changing.

In an attribution-based change program designed to keep first-year college students from dropping out, it was merely communicated that grades increase the longer the student remains in school (Wilson and Linville, 1982). That is, over time, there is grade inflation. There was no attempt to change the study habits, attendance, note taking, or any other instrumental actions of the pupils. The data suggest the effectiveness of this program in improving school performance and decreasing dropout rates, presumably because expectation of success had increased.

Emotions

The appraisal approach to the understanding of emotion is based on the simple assumption that feelings are determined by thoughts, that is, thoughts are necessary and sufficient determinants of affective states. For example, negative self-related beliefs such as "I am a bad person" or "I am incompetent" are sufficient to promote negative feeling states and decrease personal esteem.

Causal beliefs have far-reaching emotional consequences, both in regard to the self and feelings about others. To understand the emotional lives of school children, it is essential to invoke causal ascriptions. Here, I present an overview of the implications of causal thinking for some feeling states (see Hareli and Weiner, 2002).

It has already been indicated that hope for the future and, similarly, the opposing feeling of hopelessness are guided by the perceived stability of a prior cause of failure. The other causal properties also have affective implications. Attribution of success to the self gives rise to pride in accomplishment and increments in self-esteem, whereas this is not the case for external causal

beliefs. Hence, ascriptions of success to ability or effort both promote pride and positive views of the self, whereas attribution to luck, or to help from others, does not contribute to these self-directed affects. Indeed, attribution of success to others fosters gratitude (if the help provided by the other was volitional). One consequence of the simultaneous influences of the hedonic bias as well as the desire to manage the thoughts of others is that public expressions of gratitude exceed private beliefs about the deservedness of this expression.

Perceived causal controllability, the third property of causes, has a complex relation to feeling states, with the linked affects dependent on the target of the emotion. Ascription of failure to a controllable cause such as lack of effort, given a desire to reach the goal, elicits guilt and regret. On the other hand, lack of aptitude as the cause of failure promotes humiliation and shame, which also involve social comparison with competent others.

These same attributions for the behavior of others, however, elicit a different set of emotions. If another failed due to controllable causes, then anger tends to be elicited. On the other hand, nonattainment of a goal due to uncontrollable causes tends to promote sympathy. Self- and other-related emotions are entangled within a complex interconnected system – communicated anger, if accepted, implies a controllable cause, which should promote guilt, whereas communicated pity implicates uncontrollable causality and promotes feelings of humiliation.

A number of other achievement-related affects also depend on causal thinking. Envy, for example, tends to be elicited by internal and uncontrollable causality for the success of others. One is envious of another's intellectual capabilities, or beauty, but not of their hard work, since one can also work hard. Admiration, on the other hand, can be evoked by the effort as well as the ability of successful others.

Affect-related personality inferences also are linked to perceptions of the causal role of effort and ability. For example, if the success of another is perceived as due to ability, while the other communicates effort or external factors as the cause, then modesty is inferred. Modesty is a desirable inference associated with liking. On the other hand, if ability is conveyed as the cause of success, then arrogance is inferred, even if it is the true cause. If Einstein says "I am an Einstein," he nonetheless will be regarded as arrogant, which is an unfavorable trait. Thus, school-based competence has some negative consequences in that others may be envious and perceive the capable person as arrogant. This is perhaps responsible for pejorative labels, such as nerds and geeks, which convey negative attitudes toward competence.

Behavior

Expectancy of future success, along with affective states, guides future action. That is, goal anticipations and

feelings bridge the gap between causal thinking and behavior. For example, assume that a student failed in an exam and ascribes that failure to lack of ability. Inasmuch as ability is a stable cause, expectancy of future success is low; and being an internal and uncontrollable cause, self-esteem decreases while shame and humiliation are experienced. Low expectancy of success, low self-esteem, and humiliation are motivational inhibitors that contribute to a decision to leave the setting.

On the other hand, lack of effort is an unstable, controllable cause, so that attribution to this factor maintains hope and positive anticipations, while arousing guilt, which is a motivator to make amends for the past. Thus, an attribution of failure to lack of effort tends to be adaptive and functional.

Along with the attributions, emotions, and behaviors of actors, this same sequence also describes observers of the actor. An observer making attributions of failure of another to lack of ability tends to experience sympathy, which promotes help-giving. On the other hand, ascriptions to lack of effort evoke anger and an antisocial reaction (see Weiner, 1995, 2006).

As the attributions of ability versus effort are linked with disparate reactions, attribution-change programs have focused on having students make insufficient effort rather than low-ability ascriptions in situations of failure (see Perry *et al.*, 1993). These programs vary but often provide models in film clips portraying adaptive attribution patterns. The attribution interventions have proved successful and provide promising tools to improve school-related performance.

Some Concluding Comments

Attribution theory was developed and nurtured by social psychologists. However, the centrality of thoughts about causality in everyday life transported this body of knowledge to other fields of study. For education, attributional analyses provided a ready fit inasmuch as parents, pupils, and teachers focus so much attention on evaluation and the causes of good and poor performance.

Two broad questions emerge from this approach: How does one know or determine one's level of ability, the adequacy of effort expenditure, and the like? Thus, existential questions, such as "Who am I?" (as well as, "Who are you?"), are addressed. In this article, three inferential sources were pointed out: biases that enhance the self, communications from teachers, and impression management techniques used by others.

The second extended question asked is: "So what? What difference does it make if success or failure was caused by low ability, as opposed to lack of effort?" These questions point out the functional and motivational

significance of causal thinking. Here, the classification of causes into fundamental properties was introduced. These underlying characteristics were shown to influence expectancy of success, emotional reactions, and personality inferences. Of special note is the array of affects linked to causal thinking: admiration, anger, envy, guilt, gratitude, hope, hopelessness, pity, pride, regret, self-esteem, shame, and sympathy were mentioned, and this is not the full list of causally linked feelings.

Expectancy and affect, in turn, are two key mediators of achievement-related behavior. Thus, increased school motivation and decreased school dropouts can be affected by alteration of perceived causality. In sum, the study of education processes is intimately linked with attributional analyses.

See also: Cognition and Emotion; Motivating Students in Classrooms; Volitional Control of Learning.

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Intrinsic and Extrinsic Motivation

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Individuals are motivated for different reasons. Throughout the day, and over a lifetime, individuals act and behave differently depending on the circumstances surrounding their decisions. One who feels supported in an educational environment might feel satisfied and challenged with a difficult class project. On the other hand, one who feels controlled in an educational setting might consequently miss a lot of classes and appear disengaged while in class. When one feels supported and engaged, positive forms of motivation such as intrinsic motivation are likely to be sustained. In a supportive context, individuals are more likely to value what they do and feel satisfied while doing the activity. In contrast, when one feels controlled and pressured, negative forms of motivation such as external regulation are likely to be triggered. In a controlling context, individuals are more likely to do only what they are told and feel dissatisfied and disengaged while doing so.

The difference between intrinsic and extrinsic motivation is a well-known dichotomy between motivational types that has been discussed in the psychology literature for almost four decades. The following examples illustrate this dichotomy. Tommy likes reading, and he reads every chance he gets. His room is filled with books! Tommy's parents encourage his reading and get involved whenever they can. On the other hand, Melanie does not like to read, and she only does so when she is forced by her teacher and parents to read for an upcoming book report. The difference in their environments fosters different types of motivation which supports different learning outcomes.

Intrinsic Motivation

Intrinsic motivation is the most self-determined, or autonomous, form of motivation. It underlies activities that are performed purely for the joy gained from the activities themselves. In other words, individuals who are intrinsically motivated choose to engage in activities solely for the pleasure, interest, enjoyment, and satisfaction derived from performing those very activities. A child who plays with construction blocks for hours at a time, fully absorbed in the process of building towers and houses, is intrinsically motivated toward that activity (Deci, 1971, 1975). He does not do it in order to gain something from it, but only for the simple, pure pleasure of the activity itself.

deCharms's (1968) notion of perceived locus of causality speaks directly to the autonomous nature of intrinsic

motivation as it describes the tendency of individuals to be motivated to feel like they are at the origin of their behaviors. That is, individuals want to perceive themselves as choosing to perform behaviors out of their own volition. For example, students are more likely to feel like the behavior originated from within if they were encouraged to develop their projects and worked on them at their own pace. In contrast, students are more likely to feel their behavior is controlled if a certain project topic were imposed upon them with a very strict deadline. deCharms' concept of perceived locus of causality is, furthermore, linked to the basic psychological need for autonomy discussed in self-determination theory (SDT) (Deci and Ryan, 1985, 2000). The need for autonomy does not signify independence. Autonomy signifies choice and volition. The need for autonomy is satisfied when individuals feel they have choice and volition while engaging in a particular behavior. The need for autonomy underlies the development of intrinsic motivation.

Another basic need that supports intrinsic motivation is the need for competence. The concept of competence derives from White's (1959) assertion that people often engage in activities simply because they want to experience themselves as competent or efficacious. This is linked to the basic psychological need for competence as described in the SDT (Deci and Ryan, 1985, 2000). The need for competence is satisfied when individuals feel like they are developing skills and mastering the activities they are performing.

The satisfaction of the basic psychological needs for autonomy and competence are instrumental for the maintenance and enhancement of intrinsic motivation. Environments that provide support for competence and autonomy will foster intrinsic motivation. For example, a classroom environment that encourages students to become involved in how they will learn new materials and that provides them with the opportunity to frequently experience small successes will foster intrinsic motivation. In contrast, a classroom environment that is dictated, and, therefore, does not provide support for autonomy and competence will diminish intrinsic motivation and not encourage student involvement. The provision of rewards has been found to decrease an individual's level of intrinsic motivation when the rewards are salient and given for performing an activity that the individual finds interesting. This is the case because rewards are usually seen as an attempt to control one's behavior, thus jeopardizing one's sense of autonomy. Take

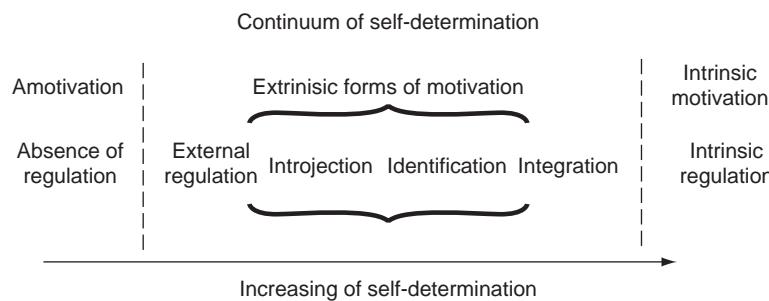


Figure 1 Visual representation of the self-determination continuum.

for example 6-year-old Lisa who really likes to read *The Cat in the Hat* book. Just to showcase her reading skills at the next family reunion, Aunt Sally begins to give money to Lisa for reading the book to family and friends. After a few family reunions and a few dollars spent, Lisa does not want to read *The Cat in the Hat* on her own anymore. She will only read it if she is given money for doing so. This is a book that Lisa used to enjoy reading, on her own, without any external incentives. In other words, she was intrinsically motivated toward reading the book. From a motivational perspective, the provision of the reward for doing an enjoyable activity shifted the perceived locus of causality from internal to external, making Lisa feel less autonomous about reading the book – feeling less like an originator of her behavior. Lisa is no longer doing the activity because she enjoys it but because she wants to obtain the reward. Reading this book is now more extrinsically motivated than intrinsically motivated, and it was her environment that triggered this change.

Extrinsic Motivation

Extrinsic motivation refers to the forms of regulation that underlie activities that are performed as a means to an end. Little Lisa who is now reading *The Cat in the Hat* because she wants the money is extrinsically motivated toward reading that book. A fifth grader who does his homework in order to gain the privilege to go see a movie at his friend's house afterward is extrinsically motivated toward doing his homework. This child is doing homework in order to obtain a reward. The same would be true of a teenage girl who cleans her room in order to avoid losing car privileges over the weekend. She is cleaning her room because she does not want to lose the car for the weekend, not because she just wants to clean and because she enjoys a clean room. Taken as a whole, extrinsically motivated activities are performed to attain a goal, to obtain a reward, or to avoid a penalty or a negative consequence. When extrinsically motivated, individuals perform the activities not because they simply derive enjoyment from them, but because the activities are instrumental in reaching a goal, or avoiding an undesirable outcome or

consequence. The activities may still be valuable to the person engaging in them, but the motivator is not the enjoyment but rather what can be obtained by engaging in the activity.

Although motivation can be dichotomized as intrinsic and extrinsic, SDT (Deci and Ryan, 1985, 2000) further specifies four types of extrinsic motivation. The different types of extrinsic motivation vary in terms of the degree to which they have been internalized and thus are self-determined. **Figure 1** depicts the placement of the four forms of extrinsic motivation and the one form of intrinsic motivation along a continuum of self-determination.

External Regulation

This is the form of motivation commonly referred to as extrinsic motivation, for it involves behaving to obtain a reward or avoid a punishment. This form of extrinsic motivation is the least self-determined and is thus located on the far left end of the continuum. Behaviors that are externally regulated are performed because of pressures, obligations, and constraints coming from external sources. When externally regulated, individuals try to obtain a reward or positive consequence, or they try to avoid some undesirable consequence. Externally regulated behaviors are only performed in the presence of specific external contingencies, such as controlling teachers, strict school requirements, and pressures from peers that are maintaining the behaviors themselves. In the absence of these contingencies, individuals will not remain engaged in the activity, will eventually quit or abandon the activity, or will not be able to persist when the task becomes more difficult. For example, students who show up for an eight o'clock physics test may do so because they do not want to fail the class and are trying to get a good grade on the test. If external regulation is their main motivation for being in class at eight in the morning, many students will not show up for class unless attendance is required or there is a test on a certain day. As constraints, pressures, and rewards shift the perceived locus of causality outside of the individual, external regulation is opposite to intrinsic motivation and consequently not self-determined (Deci *et al.*, 1999).

Introjected Regulation

This underlies behaviors that are performed out of guilt, ego involvement, or other kinds of internal pressures. Similar to external regulation, powerful pressures maintain these behaviors; however, unlike external regulation, the pressures associated with introjection are internal as opposed to external. Introjected regulation is not self-determined because the behaviors are pressured and controlled even though that pressure and control come from an internal source. Individuals who behave mainly out of introjection engage in behaviors because they want to avoid feeling guilty or bad about themselves or because performing the behavior will allow them to aggrandize themselves. For example, a young man is asked to perform in a spelling bee because of how well he would represent the school. Although he does not feel very comfortable with the idea of competing in front of a lot of people, he accepts because he would feel guilty for not participating. He does not want to disappoint his teacher. With introjection, the contingencies maintaining the behaviors have been partially internalized. That is, they are within the person but not fully endorsed by the self. The regulation of the behavior is not yet fully integrated with the individual's motivations, cognitions, and affects into a coherent whole, reflected by the fact that the individual does not really want to perform the activity and does not choose to do it.

Identified Regulation

This exists when the contingencies maintaining a certain behavior become endorsed by the self and the behavior itself becomes valued, thus no longer requiring the specific contingencies. At this point, the behavior is said to be regulated through identification. When individuals are motivated mostly out of identification, they identify with their behaviors, value them, and find them important. The identified regulations are endorsed by the self, which means that although the behaviors are still instrumental in attaining goals (thus still extrinsic), the goals are valued by the individual who identifies with the importance of the activities performed. At this point, the behaviors are considered to be self-determined or autonomous though they are not considered intrinsically motivated. For example, a student might be working on an extracurricular project requiring him to stay after school 3 nights a week. Even though the activity is demanding and might interfere with other things going on at that time, he gladly participates because this extracurricular project is important to him. He does not necessarily find it interesting (and thus not intrinsically motivated) but it is valued.

Integrated Regulation

This is the form of motivation that represents the most self-determined form of extrinsic motivation. When a behavior

is regulated through integration, it is not only valued but also integrated within the self and is in harmony and coherence with other aspects of the self. A graduating senior might talk about her academic experience by discussing the growth she has experienced over the years, the friends she has made, the connections she now has with faculty members, and how all these experiences will benefit her in her chosen career and in becoming the person she aspires to be. The motivation that underlies such statements is a fully self-determined extrinsic motivation. The motivation is still extrinsic because the experiences discussed are in the service of the goal of her future life and career, but these experiences are fully integrated within the self.

By further examining the continuum of self-determination, one can see that intrinsic motivation is located at the far right of the continuum and is also separated from the other types of motivation on the continuum. This is so because intrinsic motivation is inherent to the person rather than resulting from internalization and is based on interest in the activity itself rather than on the importance of the activity for self-selected values and goals. Intrinsic motivation is the prototype of self-determination signifying engagement in activities because the activities themselves are rewarding.

Process of Internalization

Considering the various forms of motivation, including intrinsic and extrinsic motivation, is very useful when trying to explain why someone would behave or act a certain way. Distinctions between the different types of motivation allow researchers to explain a considerable range of human behaviors and experiences. Understanding these various forms of motivation also enables researchers and practitioners to identify antecedents that will foster these different types of motivations and the consequences that may follow these motivated behaviors.

According to SDT, individuals have a natural inclination toward growth and toward integrating the different aspects of the self into a single unified sense of self. The process of internalization is an example of the functioning of this natural movement toward a greater integration of the self and toward more self-determined forms of extrinsic motivation to accompany people's intrinsic motivation. Integration refers to the natural propensity of individuals to take in or internalize the contingencies underlying their behaviors and then to integrate them into their core self.

Antecedents of the Development of Intrinsic and Extrinsic Motivation

Certain social and environmental contexts provide what is essential for the development of self-determination and

intrinsic motivation. In addition to individuals' natural propensity toward internalization, autonomy-supportive settings foster the development of intrinsic motivation. Social and environmental contexts that are autonomy supportive acknowledge people's perspective and provide them with choices and encouragement. Such settings allow self-initiative and provide a rationale for performing requested behaviors. In addition, and very importantly, settings that are autonomy supportive rarely use pressures, controlling strategies, and external contingencies to motivate behaviors; rather, in these settings, empathy for others is frequently expressed and appropriate and timely feedback is offered in order to confirm competence within behaviors or tasks.

Controlling contexts make use of explicitly pressuring and coercive strategies to motivate behavior. For example, these strategies may include salient rewards, competition, deadlines, the threat of punishment, imposed goals, surveillance, and controlling language such as words and phrases like should, have to, and ought to (see Deci *et al.* 1999) for a review). These strategies are most often perceived as controlling because they force individuals to engage in behaviors rather than inviting their engagement. They shift the locus of causality from being perceived as internal to external leading the individual to no longer perceive himself or herself as the causal agent of the behavior.

Environmental factors and social contexts that foster the development of intrinsic motivation and self-determination are also the ones that satisfy the basic psychological needs for autonomy, competence, and relatedness. To be psychologically healthy, individuals must be engaged on a daily basis in activities that contribute to the satisfaction of these three needs.

As mentioned earlier, autonomy signifies choice and volition rather than independence. Autonomy means the endorsement of one's behaviors even though these behaviors might not reflect independence. A girl could decide to get involved in a group project where she will have to share the decision-making power. She will be working with others, not independently, and yet because it is by her own choice, she may feel completely volitional about her decision. In contrast, a boy could feel pressured to study by himself in the library for an important test. Though this behavior would be done independently, he would not want to perform it and would, therefore, not feel a sense of autonomy while doing so.

Competence refers to a sense of mastery. Students need to feel competent while engaged in various academic and nonacademic activities. A sense of competence increases the level of interest and involvement in the activities performed. The need for competence is most likely to be satisfied when students work on developing and mastering skills. An adequate level of challenge, often referred to as an optimal level of challenge, is also necessary in order to

satisfy the need for competence. Again, when this need is satisfied, as when any of the three needs are satisfied, the development of intrinsic motivation and self-determination is furthered.

Relatedness refers to the need to connect with and relate to other people. Students derive a lot of satisfaction from seeing their friends at school everyday, meeting new people, and getting to know their professors. Being with friends in school becomes an important part of going to school and contributes to the extent to which students find school satisfying and enjoyable (Ryan *et al.*, 1994). Furthermore, when students develop healthy relationships with their teachers and other staff members, their productivity and interest level in the classroom improves. This also leads to greater satisfaction and actual enjoyment within a student's academic experience.

Consequences of Intrinsic and Extrinsic Motivation

In general, individuals who behave out of intrinsic motivation or self-determined extrinsic motivation (identification and integration) have been found to experience a greater proportion of positive outcomes with their behaviors. In contrast, individuals who mostly behave out of non-self-determined extrinsic motivation (introjection and external regulation) have been found to experience a much greater proportion of negative outcomes. For example, intrinsic motivation, integration, and identification have been associated with a variety of benefits including academic achievement, school competence, and in general, higher levels of well-being (Boggiano *et al.*, 1993; Levesque *et al.*, 2004; Soenens and Vansteenkiste, 2005). In contrast, introjected regulation and external regulation have been found to lead to a host of negative outcomes including anxiety, burnout, school dropout, and in general, lower levels of well-being and vitality. Paradoxically, the harder the teachers and parents attempt to push students to do their homework, perform well in school, and achieve, the more negative outcomes are experienced without improvements in academic achievement (Deci and Ryan, 2002). By trying to force and push students to perform in school, the opposite results are often obtained. When parents and teachers are autonomy supportive, however, and foster choice and self-determination regarding school-work, students then tend to be more creative, perform better in school, and achieve more academically.

Interplay Between Intrinsic and Extrinsic Motivation

If the movement toward greater internalization and more self-determination is innate, why is it that we do not see

self-determined behaviors to a greater extent in school? A recent meta-analysis summarizing the literature on the effects of rewards on intrinsic motivation highlighted the powerful effects of using rewards to motivate behavior (Deci *et al.*, 1999). Providing rewards for behaviors that are intrinsically motivated or self-determined has been found to undermine the motivation for the activity by shifting the locus of causality outside the self (Deci *et al.*, 1999). To illustrate this process, take the example of Mary, a 5-year-old girl about to begin kindergarten. She has been talking about going to school for the past year, and she is very excited about finally being able to go to school everyday. After her first day at school, she can not stop talking about all the fun games, the school, the teachers, and all that she has done that day. She can't wait to go back! Mary shows intrinsic interest in school for the entire year and is very excited to go back to school and start first grade the following year. However, during that year, something changes. Her teacher begins talking about doing well more often. She makes use of conditional regard in the classroom and has a tendency to compare the students with one another. The teacher offers plenty of rewards for good behaviors and at the beginning of the year instituted a strict behavior-management plan in order to prevent bad behavior in the classroom. Good behavior is rewarded and bad behavior punished. In third grade, Mary is introduced to standardized tests and is constantly reminded by her teacher how important it is to do well on these tests. If asked, Mary would now say that she does not like school and does not want to go anymore. She is afraid and worried on test dates and becomes physically ill sometimes. More generally, the emphasis on standardized tests is perceived as controlling and fosters an external locus of causality, thus the development of non-self-determined extrinsic motivation. The students in Mary's class are criticized when they attempt to find the solution to a problem in a way that differs from the teacher's expectations or the predetermined answer in the textbook. Students in this class feel forced to perform well on assignments and tests, but they do not yet fully understand the concepts they need to apply. As a result, they do not feel comfortable asking questions. They refrain from asking for help because they are afraid they will be perceived negatively. This dynamics will obviously lead to poor performance on assignments and/or tests.

The emphasis on rewards in the traditional school system often works to undermine students' level of intrinsic motivation and self-determination toward school. There is less room for creative activities and exploration because the emphasis is on teaching the standardized tests to the students. The creation of autonomy-supportive learning environments, where choices and options are offered and where creativity is encouraged, would foster the development and maintenance of intrinsic motivation and self-determination (Levesque *et al.*, 2006). Autonomy

supportive environments would enable satisfaction of the needs for autonomy, competence, and relatedness which would then help students to better engage in materials, feel better about themselves, and perform better in the long run (Boggiano *et al.*, 1993; Grolnick *et al.*, 1991). The connection with teachers that is fostered in an autonomy-supportive environment allows students to feel comfortable asking more questions which then leads to overall better performance.

Looking Ahead

There is no doubt that within our education system there is an environment that is inherently restricted by rules and regulations. Grades need to be assigned, skills need to be mastered, and performance needs to meet certain standards of proficiency. However, if the environment in which these constraints are present is consciously crafted to be more autonomy supportive, then intrinsic motivation and self-determination will be more likely to flourish. This in turn will allow students to grow and develop, to reach their potential, and to experience greater levels of well-being (see Vansteenkiste *et al.*, 2006, for a review).

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Achievement Goal Theory: Definitions, Correlates, and Unresolved Questions

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Research on achievement goals has emerged over the last three decades as one of the most prominent fields of motivational research (Elliot, 2005; Weiner, 1990). Achievement goals are defined somewhat differently by various researchers, but there is general agreement that goals refer to the perceived purposes of achievement. Two broad categories of purposes have been most commonly examined: the goal of developing competence through learning, understanding, and building new skills and the goal of demonstrating competence, either to oneself or others, according to social-comparative norms. The first class of goals has been most commonly called mastery goals (or task goals), whereas the second category of goals is currently most often referred to as performance goals (it has also been called ability, relative ability, and ego goals). Achievement goals have also been distinguished according to their valence properties. In the mid-1990s, a number of researchers demonstrated that achievement goals, particularly performance goals, differed according to whether they represented an appetitive desire to approach success (performance-approach goals) or a fear-based desire to avoid appearing incompetent (performance-avoidance goals; Elliot and Harackiewicz, 1996; Middleton and Midgley, 1997; Skaalvik, 1997). A performance-approach goal represents a desire to outperform others, whereas a performance-avoidance goal reflects a goal of avoiding being outperformed by others. More recently, mastery goals have also been divided into approach and avoidance dimensions where a mastery-approach goal represents a goal of gaining competence and skills and a mastery-avoidance goal represents a concern with not doing as well as one could or with deteriorating skills (Pintrich, 2000).

Roots of Achievement Goal Theory

The achievement goal framework grew out of, and in response to, a number of motivational theories prominent in the 1970s. The need-based theories of Atkinson, McClelland, and their colleagues that held sway from the 1950s to the 1970s raised important questions about the stability of motivational tendencies. Need for achievement (nAch) and fear of failure (FOF) were believed to represent stable, personality-like needs of individuals. As social-cognitive theories such as attribution theory and self-efficacy research began to gain footholds, a group

of researchers at the University of Illinois (Carole Ames, Carol Dweck, Martin Maehr, and John Nicholls) developed achievement goal theory. They conceptualized achievement goals as motivational dispositions that were not only partly stable orientations but also somewhat malleable and subject to the influence of messages in the achievement context regarding the definition and purposes of achievement in those contexts. Whereas achievement motivation researchers described competitive, avoidance, and achievement orientations as stable aspects of personality, goal theorists generally ascribed greater responsibility to situational factors (Elliot, 2005; Urdan, 1997).

Achievement goal theory also has foundational roots in attribution theory. Carol Dweck and her colleagues examined why elementary school children often differed in their responses to failure. They argued that some children explained their failure to causes they perceived as stable (i.e., a lack of intelligence or ability), leading to a helpless response to failure. Others attributed their failure to unstable, controllable causes (e.g., a lack of effort), leading to effortful and optimistic responses to failure (Diener and Dweck 1978; Dweck and Leggett, 1988). These different explanations for failure were associated with different achievement goals. When one believes that ability can be improved through effort, the goal of developing ability (i.e., a mastery goal) will be adopted. In contrast, when one believes that ability is trait like, with little hope of altering it through effort, one becomes concerned with demonstrating superior or ability or hiding a relative lack of ability (i.e., performance goals).

The development of achievement goal theory also has strong ties to progressive ideals. Nicholls (1989) was unabashed in his belief that the democratic ideal of American education could best be realized through the pursuit, and promotion, of mastery goals. As mastery goals include a definition of achievement that is internal rather than social-comparative, all children can achieve mastery goals, regardless of their ability. After all, everyone can improve and learn, even if these occur at different rates for different students. Since performance goals define achievement comparatively, any system that promotes performance goals creates a situation where some will lose and others will win. Nicholls argued that although the pursuit of performance goals may lead to achievement in school, such an association is indicative of school systems promoting the wrong (i.e., competitive) values rather than the inherent benefits of performance goals.

The last decade or so has seen a return to the achievement motivation roots of achievement goal research. Elliot and his colleagues have argued that the nAch and the FOF are the causal antecedents of mastery and performance goal adoption (Elliot, 1997; Elliot and Harackiewicz, 1996). According to this model, mastery goals are driven primarily by an nAch, performance-avoidance goals by an FOF, and performance-approach goals by a combination of nAch and FOF. They argue that achievement goals represent the proximal, cognitive influences of achievement-related behavior that channel the more general, unconscious motive dispositions of nAch and FOF.

Correlates of Achievement Goals

A wealth of research, mostly using survey and experimental methods, has revealed a pattern of associations among achievement goals, self-regulatory strategy use, affective and motivational variables, and achievement (for reviews of this research, see Elliot, 2005; Harackiewicz *et al.*, 2000; Midgley *et al.*, 2001; Urdan, 1997). Most of this research has found a generally positive constellation of correlates with mastery goals. For example, when pursuing mastery goals, students generally persist longer when faced with difficulty, are more willing to attempt difficult or challenging tasks, use more deep-level cognitive processing strategies, are more intrinsically motivated, and feel better about school and school work. Despite these positive motivational, affective, and cognitive correlates of mastery goals, researchers have not consistently found positive associations between mastery goals and achievement, both in school and on experimental tasks (Elliot, 2005). Recent research examining the association between mastery goals and student performance on assessments designed to match instruction in actual classrooms has revealed modest positive correlations between achievement and mastery goals (Linnenbrink, 2005; Nolen, 2003).

In contrast to the correlates of mastery goals, pursuing performance-avoidance goals is usually associated with a negative pattern of motivational beliefs and behaviors. When students are performance-avoidance goal oriented, they are more likely to give up when faced with difficult work or confronted with failure, use more shallow-level cognitive strategies (such as rote memorization), are less likely to seek help when they need it, and are more likely to engage in self-defeating practices like self-handicapping. As performance-avoidance goals represent a concern with being outperformed by others and with appearing incompetent, the primary emotions associated with these goals are shame and fear. Individuals who are able to achieve well despite their performance-avoidance goal orientation are most likely to feel relief rather than pride.

Whereas the maladaptive motivational and achievement consequences of pursuing performance-avoidance goals have been found consistently, the effects of performance-approach goals on motivation and achievement have been ambiguous. Some research has found that performance-approach goals are associated with lower persistence after failure (Elliott and Dweck, 1988), greater use of surface learning strategies and less use of deep cognitive processing strategies (Nolen, 1988), greater feelings of self-consciousness (Roeser *et al.*, 1996), negative affect in school (Urdan and Midgley, 2003), and the tendency to attribute failure to lack of ability (Dweck and Leggett, 1988). However, there is also a substantial body of research that has found significant positive associations between performance-approach goals and adaptive or beneficial motivational and achievement variables, including intrinsic motivation (Elliot and Harackiewicz, 1996), teacher-assigned grades (Harackiewicz *et al.*, 2002; Roeser *et al.*, 1996), achievement motivation (Elliot, 1997; Nicholls *et al.*, 1985), engagement in science class (Meece *et al.*, 1988), valuing of school (Midgley *et al.*, 1996; Wolters *et al.*, 1996), self-efficacy (Roeser *et al.*, 1996; Wolters *et al.*, 1996), and self-regulation (Wolters *et al.*, 1996). Indeed, a number of studies have found that performance-approach goals are positively correlated with mastery goals (Nicholls *et al.*, 1985; Roeser *et al.*, 1996; Nolen and Haladyna, 1990).

It appears that the effects of a performance-approach goal orientation on motivation, affect, and achievement depend on a number of factors, including how the goals are measured, how they combine with the simultaneous pursuit of mastery goals (Barron and Harackiewicz, 2001; Meece and Holt, 1993; Pintrich, 2000; Wolters *et al.*, 1996), and personal characteristics of students including their gender (Urdan, 1997b), ethnicity (Midgley *et al.*, 1996), culture (Urdan, 2004), and grade level (Midgley *et al.*, 2001). The mixed pattern of associations with performance-approach goals makes global statements about the positive or negative effects of a performance-approach goal orientation difficult to support. Indeed, the ambiguous results have spawned a debate among achievement goal researchers regarding the potential benefits and harms of performance-approach goals (see Midgley *et al.*, 2001; Harackiewicz *et al.*, 2002). Midgley and her colleagues argued that the beneficial effects of performance-approach goals may be limited primarily to older students (i.e., college) with a history of high academic achievement. Molden and Dweck (2000) argued that performance-approach goals are beneficial as long as students are succeeding, but an orientation toward demonstrating superior ability can quickly change to a fear of demonstrating relative incompetence when students encounter failure or difficulty. Recently, Brophy (2005) argued that researchers' focus on the relative merits and drawbacks of performance goals may be misguided as observational

and interview research suggests that students rarely mention social-comparative concerns in school settings unless directly prompted by researchers, as through the use of surveys. At present, the most definitive statement that can be made regarding performance goals is that much remains unresolved regarding their definition, operation, and influence on motivation and achievement.

Classroom Goal Structures

The achievement goals that have been discussed so far refer specifically to the personal goals that individuals pursue. In addition to personal goals, there are also goal structures. Goal structures refer to messages in the environment (e.g., experimental situation, classroom, and school) that make certain goals salient. Such goal-related messages can come from a variety of sources in the achievement context, including how the purposes or definitions of success are presented, the types of tasks that are assigned, how much time students are given to complete the task, and how individuals are recognized and rewarded in the classroom, school, work, or athletic context. For example, it is common in experimental manipulations of goals to provide research participants with instructions that make one type of goal salient, and these instructions constitute the goal structure for that situation. Similarly, in a classroom, teachers can emphasize the ability differences between students (performance goal structure) by grading on a curve or emphasize the development of competence by using portfolio assessment to chart the progress of each student over time (mastery goal structure). Most researchers who have discussed goal structures have referred specifically to the classroom- or school-level goal structures (e.g., Ames, 1992; Anderman and Midgley, 1997).

Researchers examining goal structures have experimentally manipulated the goal messages in the achievement context (most commonly a laboratory setting), assessed students' and/or teachers' perceptions of the classroom goal structure in the classroom or school using surveys, conducted observations in classrooms to see which goals were emphasized, or some combination of survey and observational methods. Experimental manipulations of goals have yielded the most consistent results, generally producing an adaptive motivational pattern when mastery goals were emphasized, lower motivation and achievement when performance-avoidance goals were emphasized, and a mixed pattern of motivation and achievement when performance-approach goals were emphasized (Elliott and Dweck, 1988; Elliot and Harackiewicz, 1996). Some researchers have questioned whether the results of research using experimental manipulations of goals in laboratory settings will generalize to authentic achievement contexts such as classrooms. In the lab, it is easy to emphasize that a single achievement

goal and performance on the assigned tasks generally have few, if any, long-term consequences for participants. In the classroom, students receive multiple goal messages and are usually engaged in activities that influence their grades, an outcome of significance for most students.

Research on the influence of classroom goal structures on motivation, affect, and achievement that has been conducted in classrooms and schools has produced much more ambiguous results than has laboratory-based experimental research (see Urdan (2004b) for a review). For example, survey research has revealed that students' perceptions of a mastery goal structure in the classroom are positively correlated with their own personal mastery goals, positive affect in school, self-regulatory strategy use, and sometimes course grades (Ames and Archer, 1988; Urdan and Midgley, 2003). However, other researchers have reported a lack of association between perceived classroom mastery goal structures and a variety of outcomes, including persistence, choice of challenging work, or course grades (Wolters, 2004), between changes in the perceived mastery goal structure and changes in students' valuing of mathematics and English over time (Anderman *et al.*, 2001), or expected negative associations between classroom mastery goal structures and self-handicapping (Urdan *et al.*, 1998). Similarly, some research has found a pattern of associations between perceived classroom performance goal structures and a variety of maladaptive motivational outcomes. For example, classroom performance goal structures have been found to correlate with procrastination (Wolters, 2004), self-handicapping (Urdan *et al.*, 1998; 2004a), and attributing failure to lack of ability (Ames and Archer, 1988). However, perceived classroom performance goal structures have also been found to correlate with positive cognitive outcomes, such as attributing success to effort and failure to inappropriate strategy use (Ames and Archer, 1988) and have been found to be unrelated to other variables, such as cognitive and meta-cognitive strategy use (Wolters, 2004), and self-handicapping (Turner *et al.*, 2002).

There are several possible explanations for the inconsistent pattern of results found when examining classroom goal structures. One is that classroom goal structures may simply not be very strong, or clear, in most classrooms. As mentioned previously, genuine achievement contexts such as classrooms usually contain multiple achievement goal messages. Research suggests that students' perceptions of classroom goal structures are largely subjective creations rather than objective realities; therefore, students' existing personal goal orientations may shape their perceptions of the classroom goal structures to a significant degree (Brophy, 2005; Urdan, 2001). Observational research and survey research using hierarchical linear modeling reveal that students in the same classroom vary widely in their perceptions of the classroom goal structures. A second plausible explanation for the

mixed pattern of results is that researchers vary widely in their operational definition of classroom goal structures. The survey measures employed by Church *et al.* (2001), Ames and Archer (1988), Urdan and Midgley (2003), Urdan (2004a), Nolen (2003), and Greene *et al.* (2004) are so different from each other that comparisons across these studies are not likely to yield interpretable conclusions. It is not only clear that goal-related messages in achievement contexts can influence the personal goals students adopt, but also clear that research examining classroom goal structures is in its early stages and still needs significant advancement in conceptualization and measurement.

Remaining Questions about Achievement Goals

Although research on achievement goals has grown rapidly to become perhaps the dominant paradigm in the field, a number of important questions remain. Among these, perhaps none is more important than the question of what, exactly, an achievement goal is. A precise definition of achievement goals is critical for understanding the results of past research and to help the field advance. For example, much of the debate discussed previously regarding the benefits and costs of performance goals may hinge on how performance goals are defined, both conceptually and operationally. For achievement goal research to be useful to educators, coaches, and parents, the definition of achievement goals must be clear.

Elliot (2005) argued that achievement goals have been defined as specific, desired end states (i.e., to master a concept or skill, to outperform other students in a class, to win a competition) and as broader, overarching orientations that include cognitive and affective components (see Ames, 1992; Dweck, 1986). In a recent qualitative study, Urdan and Mestas (2006) found that high school students often reported quite different reasons for pursuing the same achievement goal. For example, some students said they wanted to outperform others (i.e., a performance-approach goal) because they wanted to silence other students who had questioned their intelligence, whereas others said they wanted to outperform others to make their parents proud. Elliot (2005) argued that achievement goal researchers should separate achievement goals from the reasons behind their pursuit in order to define goals as clearly and simply as possible. However, even when goals are separated from their reasons, there is no consensus yet about the defining features of achievement goals. Grant and Dweck (2003) found that performance goals have been operationally defined as a desire to validate one's ability, to outperform others, or as a desire to simply do well on a task, such as getting a good grade. Using factor analysis on a survey measure they designed, Grant and Dweck found that performance goals divided

into outcome goals (i.e., doing well), ability goals (i.e., validating ability), and normative goals (i.e., doing better than others and validating superior ability). Goal researchers have not yet agreed about the defining feature, or features, of performance goals. Differences in operational definitions used by goal researchers may explain the different patterns of results researchers have reported when examining the consequences and correlates of personal performance goals. Additional questions about the definition of achievement goals, including whether they are stable orientations or more situation specific, also need resolution.

In addition to the defining features of mastery and performance goals, questions remain regarding how many and which goals count as achievement goals. Several researchers have argued that social goals, including goals such as making or maintaining friendships, being a good citizen in the classroom, pleasing the teacher, and gaining social status among peers, are important goals that students pursue in the classroom (Ryan, 2001; Urdan and Maehr, 1995; Wentzel, 1991). Social goals were included in early goal measures, such as the ego/social goals construct of Nicholls *et al.* (1985). However, others have argued that social goals are fundamentally different from mastery and performance goals because the latter goals are focused specifically on competence. Although there are dozens of goals that individuals might pursue (to be a good parent, to own a nice home, to lose weight, etc.), only those goals that focus on competence in achievement-related activities – such as school, sport, and work – should be included as achievement goals (Elliot, 2005). Other goals that have sometimes been included in research on achievement goals, including social goals and work-avoidance goals (i.e., the desire to get by with as little effort as possible), may be different in kind than are mastery and achievement goals.

In addition to questions about the precise definition of achievement goals, there remain a number of questions regarding how they operate. Most research has found that mastery and performance goals are either moderately correlated or orthogonal, meaning that individuals can, and do, pursue multiple goals simultaneously. Barron and Harackiewicz (2001) argued that mastery and performance may combine in three different ways: independently, additively, or interactively. In the independent model, mastery and performance goals have unique associations with different outcomes, but these associations are not affected by the presence or absence of the other goals. For example, students with a strong mastery goal may value mathematics more strongly than do students with a low mastery goal, regardless of whether they have a strong or weak performance-approach goal. In the additive model, mastery and performance goals combine to create stronger effects than do either goal alone. For example, students with strong mastery and performance-approach goals may have

higher achievement than do students with either strong mastery or performance goals, but not both. Finally, the interactive model suggests that mastery and performance goals interact to influence outcomes. For example, perhaps performance-approach goals are positively related to persistence after failure when mastery goals are high but negatively related to persistence when mastery goals are low.

Research examining the associations between multiple goal configurations and outcomes has not yet yielded consistent results. Some studies have found that the optimal pattern of motivation and achievement is produced when students are high in their pursuit of mastery goals and low in their performance goal pursuit (Meece and Holt, 1993; Pintrich and Garcia, 1991). Others have found that the most adaptive pattern of outcomes is associated with the simultaneous endorsement of both mastery and performance goals (Elliot and Church, 1997; Pintrich, 2000). Barron and Harackiewicz (2001) examined multiple goals among college students in two ways: (1) using an experimental manipulation of goals and (2) simply asking participants to self-report their goals. They found that for self-reported goals, mastery predicted intrinsic motivation variables but not achievement on a math task, whereas performance goals predicted achievement in success, but not difficult, conditions. They did not find any unique effects of multiple goal pursuit. These results suggest that mastery goals are predictive of some outcomes and performance goals are predictive of other outcomes; therefore, the authors concluded that pursuing both goals is adaptive because it allows students the best opportunity to succeed on multiple outcomes. In the manipulated goals experiment, Barron and Harackiewicz found that holding multiple goals may benefit both high- and low-achievement motivation students when they are in situations that do not match their achievement motive well.

In an ambitious quasi-experimental study, Linnenbrink (2005) conducted an experimental manipulation of the classroom goal structures in ten upper-elementary school classrooms during a 5-week mathematics unit. She discussed achievement goal theory with the five participating teachers and then assigned teachers to one of three conditions: mastery, performance, or combined mastery and performance. Linnenbrink gave teachers a set of strategies they could use to promote the appropriate goal or combination of goals and then observed them to see if they faithfully implemented strategies to promote the appropriate goal emphasis. She also used surveys to assess students motivation (self-efficacy, interest value, and utility value), emotional well-being (positive affect, negative affect, and test anxiety), cognitive engagement (the quantity and quality of self-regulatory strategy use), and help-seeking behavior before the unit began and again immediately upon its conclusion. An end-of-unit achievement test was also administered pre- and post-intervention. Linnenbrink found that scores on the unit test

improved the most (from pretest to posttest) among students in the performance and combined performance-mastery conditions relative to the mastery goal condition. This difference between the groups decreased by the time of the follow-up test administered 5 weeks after the conclusion of the math unit. She also found that students in the performance-approach condition increased their use of expedient help seeking (i.e., just asking for someone to give them the correct answer), whereas students in the other two groups decreased slightly in their expedient help-seeking behavior from pre- to posttest. There were no goal-structure-group differences, either in mean level or change over time, for motivation, emotional well-being, cognitive engagement, or adaptive or avoidance help seeking. From the research examining multiple goals, it appears that mastery goals are predictive of some outcomes and performance goals are predictive of others. When combined, their additive and interactive power does not appear to be substantial. More research on the combined effects of mastery and performance goals, over time, under success and failure conditions, and with populations of different ages is needed before firm conclusions can be drawn.

Finally, more research is needed that examines possible differences by age, culture, and achievement level in the definition and function of achievement goals. A limited body of research indicates that cultural factors such as race (Midgley *et al.*, 1996) and generational status (Urdan, 2004a) may influence the way students interpret goal-related messages in the classroom and the association between achievement goals and various outcomes. As noted earlier, some have argued that achievement goals, particularly performance goals, have different consequences for young (i.e., elementary) and older (i.e., college) students (Midgley *et al.*, 2001) and for high achievers compared to low achievers (Dweck and Leggett, 1988). Once clear conceptual and operational definitions of achievement goals have been established, research examining these cultural, age, and achievement level differences should prove most interesting.

Conclusion

The achievement goal framework has produced an incredibly productive and varied body of research. As the field reaches middle age, a number of important conceptual and empirical questions remain. The continuing maturation of research in this area will undoubtedly produce findings of importance to motivation researchers and educators alike.

See also: Culture in Motivation Research: A Challenging and Enriching Contribution; Emotion in Educational Contexts; Interest; Intrinsic and Extrinsic Motivation; Motivating Students in Classrooms; Motivation Regulation; Self-Concept in Learning: Reciprocal Effects Model

Between Academic Self-Concept and Academic Achievement; Self-Efficacy Beliefs; Volitional Control of Learning.

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Further Reading

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Flow in Education

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Glossary

Flow – A state of optimal experience characterized by total absorption in the task at hand; a merging of action and awareness in which the individual loses track of both time and self.

Brief Definition and History

Nearly every educator holds the primary, though often elusive, goal of facilitating students' deep engagement in learning activities. In recent decades, Mihaly Csikszentmihalyi's flow model has advanced our understanding of the experience of deep engagement, as well as the individual and contextual factors that may promote it. The model has implications for both research and practice, and has seen application in fields, including education, psychology, psychiatry, anthropology, and business. This article provides a description and analysis of the flow model, and summarizes the potential and actual applications of flow in education.

Born out of a desire to understand intrinsically motivated activity, flow refers to a state of optimal experience characterized by total absorption in the task at hand; a merging of action and awareness in which the individual loses track of both time and self. The flow state is experientially positive, and out of the flow experience emerges a desire to replicate the experience. The concept of flow was developed nearly four decades ago by psychologist Mihaly Csikszentmihalyi while he was observing students at an elite art school in the United States. In an effort to understand what led individuals to be passionate about their creative pursuits, Csikszentmihalyi observed the students as they worked on their artistic creations. He quickly noted that students often became so engrossed in their work that they would effectively tune out any outside distractions or obligations. Students would lose track of time, missing meetings or mealtimes, working well into the night, apparently sustaining deep levels of both concentration and enjoyment for extended periods. Almost paradoxically, once the painting or sculpture was completed it seemed to lose its value to the student: The creation was often hauled back to a dark corner of the studio where it would sit indefinitely. It became clear that for these art students, the value in art was not to be found in the final product so

much as it was in the process of creating it: once the final brush stroke was applied students rarely took the time to admire their own creation, but instead were eager to get involved in a new project. Csikszentmihalyi came to characterize these experiences as autotelic, where the goal (*telos*) lies in participation itself (*auto*). In the nearly four decades that have elapsed since this initial discovery, Csikszentmihalyi and colleagues have studied the flow experience in multiple contexts, and have identified a shared phenomenology in that participants consistently describe optimal states of complete absorption, focus, and enjoyment (for reviews see Csikszentmihalyi, 1990; Nakamura and Csikszentmihalyi, 2002).

The Flow Model and Its Use in the Study of Education

Studies of the flow experience have revealed consistency in the conditions under which these optimal states most often occur. Numerous researchers have confirmed commonalities both in optimal experiences and in their underlying conditions (Csikszentmihalyi, 1975/2000, 1990, 1996; Jackson, 1995, 1996; Massimini and Carli, 1988; Perry, 1999).

The Flow Experience

The optimal state described by individuals is most commonly characterized by: (1) intense concentration on the task at hand; (2) a deep sense of involvement and merging of action and awareness; (3) a sense of control over one's actions in dealing with the task at hand; (4) enjoyment or interest in the activity; and (5) a distorted sense of time (usually that time has passed very quickly). During the process of gathering these descriptions, several interviewees described themselves as being in flow or flowing. Thus, experiences characterized by such descriptions have become known as flow experiences or flow states.

The Flow Conditions

The specific activities from which individuals derive flow experiences vary widely. Interviews with males and females of different ages, classes, and cultural backgrounds have revealed that the flow state can emerge from involvement in a variety of activities, including athletics, performing surgery, tending cattle, haggling in the marketplace, working

on a factory line, reading, and writing. While there is considerable variation in the particular activities that lead people to experience flow, there are a number of phenomenological conditions that are typically present when flow does occur, regardless of the specific activity in which one is engaged. These conditions include: (1) engagement in activity chosen for its own sake – not a necessary, but a facilitative condition; (2) perceived challenges of the task at hand that are relatively high and in balance with one's perceived skills; (3) clear proximal goals that are regarded as important; (4) immediate feedback indicating one's success at meeting these goals; and (5) highly focused, rather than divided or scattered, attention.

Over the years, challenge and skill have emerged as two primary conditions for the flow experience: research has consistently shown that when challenges and skills are relatively high and in balance, the experience of flow likely ensues (Csikszentmihalyi and Csikszentmihalyi, 1988; Csikszentmihalyi, 1990, 1997). The flow model is often depicted by a chart similar to that shown in **Figure 1**. The figure describes four different channels of experience, each defined by the relative relationship between challenge and skill. When challenges and skills are both high, individuals tend to experience flow. Instances marked by high challenges but low skills tend to produce anxiety, while instances marked by low challenges but high skills produce relaxation (or at the extreme, boredom). Finally, instances of low challenges and low skills tend to produce feelings of apathy. Some researchers have further parsed these basic four channels of experience into 8 or even 16 channels (see Massimini and Carli, 1988), but in the interest of simplicity, and to preserve the focus on the flow state, only the more basic model is presented here.

The flow model itself is dynamic and is designed to account for changes in ability and circumstance: as an individual becomes more skilled, a given activity becomes decreasingly challenging, with the result that a person may cease to experience flow. In order to maintain one's

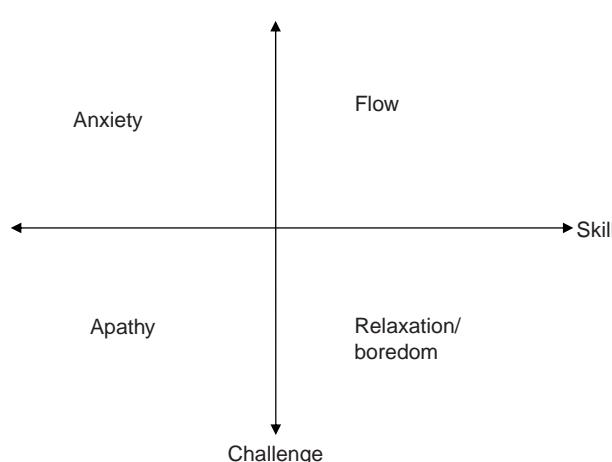


Figure 1 Channels of subjective experience.

state of flow, the challenges of one's activities must be increased by choosing a more difficult task, setting a higher goal, or otherwise manipulating one's circumstances to bring challenges and skills back into a state of balance. Likewise, an individual may take on a task that is more challenging than one's skills are able to address at the moment, producing a state of anxiety. This anxiety can be relieved either by taking action to rapidly improve one's skills and bring them into alignment with the current challenges, or by adjusting one's activities and/or goals downward, so that the challenges of the activity are more in line with one's current skills. When viewed in an educational context, this dynamic nature of the flow model is similar in many ways to the zone of proximal development (Vygotsky, 1962; Gray and Feldman, 2004).

Some activities by their very nature are structured in such a way that proximal goals and feedback are more salient, challenges can be manipulated to best match one's skills, and distractions are minimized to focus attention. Indeed, there is some evidence that certain activities (e.g., making music and competitive athletics) are more likely than others to produce flow (Csikszentmihalyi, 1990). Nevertheless, flow refers only to a subjective phenomenology, suggesting that what matters most is that these conditions are salient to the individual, not necessarily inherent to the activity itself. Individuals have the capacity to identify challenges in seemingly unchallenging situations, define proximal goals and rules for engagement, and focus attention in such a way as to create the conditions for flow even when such conditions are absent from the task at hand. What is most essential for the experience of flow appears to be one's subjective perception of challenge, skills, goals, feedback, autonomy, and focused attention. Accordingly, numerous investigations have documented the flow state among individuals while doing daily household chores (Csikszentmihalyi, 1990), working in factory jobs (LeFevre, 1988), living in concentration camps (Logan, 1985), and in other situations that might appear on the surface to be counterproductive to the experience of flow (for a review, see Csikszentmihalyi, 1990).

The experience of flow may be related to personal characteristics. Adolescents who are highly optimistic and those with higher self-esteem generally report higher levels of flow than their peers (Schmidt *et al.*, 2007). Adolescent females tend to report more flow than males (Shernoff *et al.*, 2000). Turning specifically to individual characteristics related to flow in classrooms, American 12th graders report more flow in school than 10th graders, ethnic minority students report more flow than white students, and students from lower socioeconomic backgrounds appear to report more flow in school than their more advantaged peers (Shernoff and Schmidt, under review).

The momentary experience of flow is also linked to sustained engagement in tasks. Individuals who experience flow are likely to seek out these optimal experiences again,

with the result that they develop commitments to certain tasks or fields of engagement. This phenomenon has been referred to as emergent motivation, because one's desire to continue to pursue an activity emerges from the very experience of engaging in the activity. This perspective has been applied to the study of long-term academic pursuits. For example, Csikszentmihalyi, *et al.* (1993) demonstrated that students who have positive subjective experiences in a particular academic domain demonstrate greater commitment to that domain several years later. Csikszentmihalyi and Schneider (2000) demonstrated similar links between classroom experiences and students' future aspirations.

The Paradox of Flow in Educational Contexts

While the flow model was developed as a model of engagement more generally, it is not difficult to see the numerous applications to academic engagement. Many of the conditions that facilitate flow are present and manipulable in most classroom environments. While most academic activities are not freely chosen, there is some room to offer choice in learning activities. The balance between challenges and skills can certainly be adjusted to promote a state of optimal balance for students. Goal setting and feedback are both regular parts of most classroom settings. Finally, teachers can minimize distractions to promote attention to the task at hand. According to the model, if some or all of these conditions could be facilitated in classrooms, several things would be more likely to occur; students would likely experience flow when engaged in academic tasks, having positive subjective learning experiences. These positive experiences would motivate students to continue their deep engagement in tasks, as they would desire to maintain their positive flow state. As it is a dynamic process that keeps one in a flow state, learning would occur in order to keep one's skills in balance with the ever-increasing challenges presented by the classroom environment. Over time, such engagement would develop into long-term commitments to particular academic endeavors, and ideally, to increased success with related academic tasks.

Research has confirmed that some of the conditions that tend to promote flow are often present in educational settings. Specifically, adolescents experience high levels of challenge and skill more often in school than in any other context of their lives (Csikszentmihalyi, 1990). Recent research in American schools has suggested that while the challenge and skill conditions are often present in schools, students generally do not feel the deep concentration, involvement, and enjoyment that typically follow from these conditions. (Schmidt, *et al.*, 2007) Similar findings were obtained in a study of Italian students (Delle Fave *et al.*, 2002). The context of school is a unique setting in that the flow experience does not seem to follow from these two basic conditions as is the case in other contexts.

It appears to be academic classes, in particular, where the link between the flow conditions and the flow experience fails to exist. Research examining traditional middle and high school classrooms from the perspective of flow theory suggests that the instructional practices that are typically used in classrooms may lack certain other conditions for flow. Most high school students still spend a majority of their classroom time doing individual seatwork or listening to lecture, and while these activities may present significant challenges in which children can apply their skills, they tend not to be very involving for students (Shernoff, *et al.*, 2003).

Turner and colleagues (1998), similarly, have argued that specific instructional practices may promote flow experiences more often than others. They found that middle school students experienced the most flow when their teachers provided more scaffolded instruction (thus manipulating the balance of challenge and skill) and when they used instructional practices that fostered intrinsic motivation, such as providing choices and taking interests of students into account. The problem is that at the middle and high school level, the practices that produce the flow experience tend to be few and far between.

Schweinle, *et al.* (2006) provide further explanation for this disconnect between the flow conditions and the experience of flow in classrooms. In a study of elementary school mathematics classes, the researchers found that activities generally perceived by students to be challenging, were largely viewed as a threat to students' self-efficacy and were not seen as an opportunity to develop new skills. The authors speculate that children in elementary grades may have a different and more negative definition of challenge than older individuals. It may not be until individuals are older that they can view challenges more positively, after they have experienced the opportunities that optimal challenges can provide.

These studies suggest that while challenges and skills are often present, some of the other conditions for flow tend to be lacking in classrooms. Conditions for the flow experience also include: recall that focused attention, clear short-term goals, and the feeling that one is engaged in an activity that is freely chosen. Arguably, many traditional classroom environments might be characterized as places where students have little choice about their learning activities, and where the focus is on longer-term goals (e.g., completing the assignment, getting a good grade) rather than short-term goals (e.g., completing one small step at a time). In addition, a bustling classroom where students shift their attention from subject to subject after only a short period of engagement may not be the ideal place to promote focused attention. Indeed, there is some empirical evidence that in the rare cases where these additional conditions are present in classrooms, the flow experience is more likely to occur (Shernoff *et al.*, 2003, Schmidt *et al.*, 2007).

There are certain settings that do appear to consistently promote flow. When in nonacademic classes like fine arts or music, students experience greater levels of flow than in almost any other context, inside or outside of school (Schmidt, *et al.*, 2007). Similarly, in those relatively rare instances where students are involved in more hands-on, collaborative work in their academic classrooms, the experience of flow is more frequent (Shernoff *et al.*, 2003). Given that the flow state is more likely when students are engaged in these active learning environments, it is not surprising that students in nontraditional learning environments that emphasize active learning tend to experience more flow. Rathunde and Csikszentmihalyi (2005a, 2005b) compared the experience of students in traditional public middle schools to students in a Montessori school. While students in the two school types did not differ from one another in their subjective experience of nonschool activities, their experience of school was very different in that Montessori students experienced flow much more often than students in a traditional school. In 2004, Johnson obtained similar results in a study that compared the experience of students in a traditional American high school with that of students in an alternative high school with greater emphasis on student autonomy.

Andersen (2004, 2005a, 2005b, 2007) has conducted comparative studies in several Scandinavian countries and in Japan in which he observed classrooms and interviewed students about their flow experiences. Primary-grade students in Denmark experience particularly high levels of flow in school compared to students in other countries. These findings may be due to an emphasis on student autonomy, interest, and an appropriate balance between teacher-led and student-led learning activities (Andersen, 2004). These observations are consistent with the findings discussed earlier in which challenge and skill alone appear to be insufficient to produce flow in school contexts. Autonomy and control appear to be particularly critical conditions for fostering flow in school. It is important to note, however, that although Danish students were by far the most engaged in school, they lagged behind students from other countries (specifically Finland) in their performance of basic academic skills (Andersen, 2005a). These results suggest that schools should be warned against promoting engagement in school at the expense of demanding competence when it comes to basic skills.

Anderson's (2005b) work in Japan has identified several elementary schools and afternoon programs that are specifically designed to promote optimal learning among students. Central to these programs is a collaborative learning environment in which both students and teachers are expected to learn and develop through the use of computer-based activities and other advanced problem-solving activities. Classroom activities require frequent changes not only in activity, but also in students' physical placement in the room, moving from group discussions, to

hands-on projects, to teacher lecture–discussions, to computer sessions, all focused on the same subject matter. Andersen reports that students who participate in these programs not only experience a high degree of flow, but also develop deep understanding of the academic material. Unlike the Scandinavian programs studied, these Japanese programs have achieved a balance between the promotion of engagement and focus on learning outcomes.

Putting Flow theory into Practice: The Key School

While researchers have been able to identify those moments when students experience flow in school and link them to specific personal characteristics, instructional practices, or academic programs, most of the work presented thus far does not represent intentional application of flow theory *per se*. However, there are individual teachers, and indeed entire schools or school programs that have done substantial work to incorporate the conditions for flow into their learning environments. One of the longest-standing and most successful models of this is the Key Learning Community in Indianapolis, Indiana in the United States. The Key School is a magnet school that is part of the Indianapolis Public School System. Begun in 1987 as an elementary school, Key now serves elementary, middle, and high school students on two separate campuses. From its inception, the school has been structured to promote flow and intrinsically motivated behavior among its students. This mission has been carried out in several ways, including the development of courses and curricula that place equal emphasis on Gardner's (1993) multiple intelligences.

Perhaps the most intriguing application of flow theory has been the school's Flow Center. Students are scheduled to spend time in the Flow Center each week, just as they would spend time in any other class. The purpose of the center is to provide students with the opportunity to experience flow, so that they may recognize the positive nature of this state and be motivated to seek it out in their other scholastic activities. Knowing that many of the conditions for flow are themselves highly individual and subjective, the designers of the Flow Center recognize that the flow experience simply cannot be created for all students in a classroom context by the manipulation of activities or expectations by some external person (usually the teacher). What is more valuable then is to provide students with the tools to create flow for themselves, so that they can facilitate their own flow in a variety of environments. In order to help students experience flow, the Flow Center is equipped with a variety of games, puzzles and challenging activities for students to engage in. Students are free to choose their own activities in the Flow Center on the one condition that the time spent in there is not treated as recess or downtime but is intended for problem-solving activities. The mission

of the flow room is to help students realize that they can become deeply engaged in activities that are educational, and that the same processes they used in the flow room (whatever they are) can be applied in other areas of their studies (see Whalen and Csikszentmihalyi, 1991 for further description).

Evidence suggests that these modifications in the school environment translate into academic success. In addition to an uncommon sense of excitement about learning observed by visitors to the school, more standard measures point to success as well. Standardized test scores for students at the elementary and high school level are consistently higher than those of students at other schools in the district, though it is important to note that the high school program has existed only a short time, with the first students graduating in 2003. While only time will reveal the long-term success of these students, all initial indications are positive. In the years for which data are available, the school posts graduation rates at or near 100%, with the vast majority of graduates pursuing postsecondary education.

Looking Back, Looking Ahead

An examination of students' educational experience from the perspective of flow theory is informative to both researchers and educators in that it helps us understand the personal and situational factors that promote students' deep engagement in learning. There is enormous potential for students to experience flow in schools, but this potential is often thwarted because some key conditions for flow are largely missing from many of today's classrooms. While students generally experience two of the main conditions in that they are using their skills to address increased levels of challenges in the classroom, they often fail to experience flow. This may be because school environments generally offer few opportunities for choice. Moreover, the goals and feedback in classrooms may be focused on a target that is less immediate than the goals that are usually salient in flow experiences. Finally, classrooms may need to be structured in a way that helps students focus their attention on the tasks at hand.

Most encouraging is the fact that flow is consistently observed in a number of unique school contexts. Students often feel flow in their nonacademic classes, most of which provide a number of flow conditions like choice, autonomy, and focus that are typically absent in academic subjects. Likewise, students tend to experience flow when engaged in hands-on learning tasks. Additionally, a number of non-traditional schools and school programs are very successful in facilitating flow among their students – this appears to be attributable to greater focus on many of the conditions that produce flow. Teachers interested in increasing their

students' engagement in classrooms may learn a lot by examining the structure of nonacademic classes, as well as the nontraditional programs mentioned here, to take some cues about how to create more of the conditions for flow in students' everyday experience.

Looking to the future of research on flow in education, there is still much work to be done. First, more research needs to be done linking the experience of flow in academic pursuits with a variety of learning outcomes, as the few studies that have addressed this issue have produced mixed results. Future research must further examine the nature of links between the experience of flow and specific learning outcomes. Additionally, more research is needed to understand the link between flow in a given subject area, and long-term commitment to that field.

Second, relatively little work has been done to examine the role of flow in learning environments beyond the classroom. One emerging application of flow theory in education concerns the use of computers and video games. Children and adolescents frequently experience flow when engaged in video and computer games (Bassi and Delle Fave, 2004). In recent years, researchers and educators alike have attempted to use the appeal of videogames to construct interactive computer technology for learning. A growing body of evidence suggests not only that these e-learning environments can be intensely engaging, but also that such engagement is linked to a variety of positive learning outcomes (Coller and Shernoff, 2006; Pearce, 2005; see Scrosesby and Shelton, 2007 for a review). An examination of the e-learning experience from the perspective of flow theory will assist in the understanding and design of these increasingly used educational tools. Likewise, researchers should continue to examine the role of flow as it relates to learning in other extracurricular environments.

Third, the vast majority of research on flow in education has involved children and adolescents. While the experience of flow appears to be consistent across age groups, it is possible that certain conditions for flow, similar to challenge or autonomy, might be differentially salient to learners of different ages. Thus, examining a broader age range of learners, including adults, would be informative. In general, research on flow in schools should take into consideration the developmental stage of the students under investigation.

Finally, we must not forget that teachers play a key role in educational processes – an examination of teachers from the perspective of flow theory would be informative as well. Dissertation work by Di Bianca, in 2000, suggests that when teachers report the most flow, students generally report the least. In other words, those moments that are most engaging to teachers are least engaging to students. Further research is needed to corroborate and explain these findings.

The flow model and related research provides a solid base of knowledge regarding how students might become more engaged in their learning and how they feel when they are so engaged. This knowledge base is of practical use to educators interested in increasing student engagement. There is, however, much work remaining to be done in this field in order to more fully understand the complexities of flow's role in educational processes.

See also: Emotion in Educational Contexts; Interest; Intrinsic and Extrinsic Motivation; Motivating Students in Classrooms; Motivation Regulation; Volitional Control of Learning.

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Sociocultural Issues in Motivation

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Introduction

Until recently, motivation has been considered to be an individual phenomenon. Motivational theorists have conceptualized key constructs in individualistic terms and emphasized the individual origins and nature of motivation, although they have also long recognized that contextual or social factors have a significant influence on these individual processes. Recently, theorists have suggested, after Vygotsky, that motivation is social in nature. Sivan (1986) first suggested this idea 20 years ago but it received a major impetus with the publication of an article by Hickey (1997) 11 years later. Since then, interest in the social nature of motivation has grown as a small number of book chapters and journal articles have been published, and conference papers have been presented on the topic. Although some motivational theorists (Winne, 2004) remain skeptical of this theoretical development, this article suggests that this perspective is worthy of consideration.

Although Vygotsky considered that intellectual and affective aspects of learning were interdependent, his own work foregrounded the intellectual aspects of learning. Sivan's (1986) seminal article provided the first sociocultural analysis of motivation and was based on conventional Vygotskian notions, such as the zone of proximal development (ZPD), assisted learning, peer learning, internalization, and intersubjectivity. Hickey's (1997) article, on the other hand, was primarily concerned with examining conventional motivation research in relation to instructional and educational reform practices derived from Vygotskian sociocultural ideas. Hickey's (1997) article coincided with a renewed interest in the situated and contextual nature of motivation and these ideas have tended to be seen as synonymous with sociocultural theory. While concern with context is a legitimate aspect of Vygotskian sociocultural theory, it is not the defining aspect of such a perspective. The key commitment of sociocultural motivational theorists is their recognition of the social nature and origins of motivation. Accordingly, sociocultural researchers attempt to explain how motivational goals, values, standards, and interests are socially constructed, and how they emerge and develop from social interactions and are manifested in collaborative and individual action.

As Walker *et al.* (2004) have pointed out, sociocultural theorists of motivation require reconceptualization of motivational concepts in social terms. With only a relatively small number of exceptions however, most motivational researchers (e.g., Perry *et al.*, 2006) have maintained

their commitment to motivation as an individual phenomenon while acknowledging the role of social factors, or context, as influences on motivation. To differentiate these theorists and researchers from sociocultural motivation researchers, Walker *et al.* (2004) have referred to them as social influence theorists, applying to the motivational domain a distinction that Rogoff (1998) made in the domain of learning and thinking. This distinction has been used in the current article to frame a discussion of theoretical and meta-theoretical issues and as a basis for selection of empirical research discussed in the article.

Sociocultural Theories of Motivation

The understanding of motivation as social in nature involves complex issues concerning the relationship between the social world and the world of the individual. Sociocultural theories endorse a social epistemology and accord analytical or theoretical primacy to the social world over the individual world, while recognizing that these worlds are closely interlinked and interdependent. According primacy to the social origins of motivation does not, however, mean that explanations of individual motivation can be reduced to social explanations or that social processes determine individual motivation. Sociocultural reductionism (Martin, 2006) and social determinism are avoided in sociocultural theories of motivation through theoretical notions which explain how the social world is internalized and externalized by individuals, and which assert that while there is a dynamic interdependence between the social and individual worlds, they are distinguishable and qualitatively different from each other. Valsiner (1997) has called this latter idea inclusive separation and uses it to explain how bidirectional exchanges occur between the social and individual worlds. Bidirectional exchanges are also explained through Vygotskian concepts such as the ZPD and the notions of transformative internalization and externalization. Transformative internalization and externalization explain how aspects of the social world are selectively internalized by the individual and then externalized in subsequent social interactions; these processes, as explained below, are active and transformative so that the social world is not imprinted on, or transmitted, to the individual, and the individual, in turn, has a unique impact on the social world through transformative externalizations. Taken together, these sociocultural theoretical ideas avoid the reduction of

personal phenomena to social interaction or social processes at large and recognize the agency of the individual. They explain how individual motivation can have social origins yet the individual's intrapsychological motivational functioning is still relatively autonomous from the social world.

These meta-theoretical notions have been endorsed in the work of some, but not all, sociocultural motivation theorists (Walker, 2006; Walker *et al.*, 2004; Pressick-Kilborn *et al.*, 2005). Hickey (2003) asserts that the social world, or context, and the individual are tightly bound or fused with each other, and appears to suggest that they are not distinguishable. This view raises important issues and problems concerning the motivational agency of the individual and the reductionist position of the individual in relation to the social world. Similarly, the common categorization (Hickey, 2003) of the sociocultural motivation worldview as contextualist is inadequate as it makes context the theoretical focus rather than the social origins of motivation.

Sociocultural motivation theorization has mostly focused on well-known and central aspects of Vygotsky's writing: culture and cultural practices, the ZPD, transformative internalization and externalization, and interpersonal relations and intersubjectivity. Taken together, these sociocultural ideas contribute to an explanation of the way that motivation, conceptualized as social in nature, is internalized to become an individual process. Although there is general agreement among sociocultural motivation theorists (e.g., Sivan, 1986; McCaslin, 2004; Walker *et al.*, 2004) on this view, it is not accepted by Hickey and Granade (2004) who consider that the goals and values that support and motivate learners to engage "reside in the practices of knowledgeable communities rather than the hearts and minds of individuals" (p. 224). Theorists such as Walker and associates (Walker, 2006; Walker *et al.*, 2004; Pressick-Kilborn and Walker, 2002), on the other hand, consider that while academic practices have motivational properties, motivation is an internalized attribute of human beings. For instance, aspects of the academic practices of reading and writing may be motivating to learners, but the motivation to engage in these practices is internalized as learners work collaboratively on these activities.

Culture and Cultural Practices

Culture and cultural practices are considered, from a sociocultural perspective, to play a critical role in the construction and emergence of motivation. Cultural practices (Miller and Goodnow, 1995) are recurrent actions or activities that may be maintained, changed, or challenged. They are valued by the communities that engage in them and are associated with a sense of belonging or identity and with particular forms of discourse. They help to

structure learning and thinking activities and have motivational and affective properties and consequences. The academic practices of the school and the classroom, such as those associated with reading and writing for instance, are one type of valued cultural practice. Sociocultural theorists (Walker, 2006; Walker *et al.*, 2004; Nolen, 2001, 2007) consider that motivation is socially constructed as learners engage in academic practices, and so can be considered to emerge from these practices. Sivan (1986) has presented classroom motivation as a socially constructed norm, which, like other classroom norms, forms the basis on which both teacher and student expectations and judgments are made. These expectations include how motivation is displayed in the classroom in the form of motivated behavior that demonstrates interest and willingness to engage in learning activities.

Zone of Proximal Development

The ZPD refers to the learner's ability to successfully complete tasks with the assistance of more capable other people, and for this reason it is often discussed in relation to assisted or scaffolded learning. The creation of ZPDs involves assistance with the cognitive structuring of learning tasks and sensitivity to the learner's current capabilities. Sociocultural (e.g., Sivan, 1986) and mainstream motivational theorists (e.g., Brophy, 1999) have observed that these aspects of the ZPD make it an inherently motivational zone; the ZPD is optimally challenging (Sivan, 1986) because tasks are calibrated to the learner's level, while appropriate support and scaffolding ensure that tasks can be completed successfully. Assistance from others also helps the learner to learn how to work on difficult tasks and how to control or manage anxiety and frustration in the process. Additionally, working within the ZPD is inherently motivating because it involves the transfer of responsibility, or control, for learning, from the teacher or more capable other to the learner. This transfer of control is motivating for the student as it acknowledges student mastery of the task, and hence the learner's developing efficacy. Interaction within the ZPD is also likely to lead to the recruitment of the learner's interest in the task or knowledge domain as the learner comes to value and appreciate the knowledge which is valued by a respected, more capable other person. Furthermore, as learners come to achieve mastery in a knowledge domain, they are more likely to appreciate the relevance and value of the knowledge domain.

The ZPD can also be considered to be a relational (Goldstein, 1999) or affective zone. Goldstein (1999) has characterized the ZPD as a socially mediated space that is formed through relationships involving sensitivity and trust. In a classroom, this space is created by the interactions between students and between students and their teacher, as they engage in supportive activities that

develop learner confidence and positive emotions. This consideration of the ZPD as a shared affective zone also has important motivational implications; the emotional quality and tone of interaction in the ZPD and the sense of caring engendered can have important implications for students' engagement in learning and willingness to challenge themselves.

The ZPD has been extended by Valsiner (1997) into a system of zones which recognizes not only the importance of assisted learning, but also the factors which may assist or constrain learning, and, as Pressick-Kilborn and Walker (2002) have suggested, motivation. Valsiner's system of zones has been used by Pressick-Kilborn and Walker (2002) to understand the development of interest in a classroom learning community.

Transformative Internalization and Externalization

The reciprocal notions of transformative internalization and externalization play a central role in many, but not all, sociocultural theories because they explain the processes through which aspects of the social world become a part of the world of the learner, and conversely how the learner's actions and behavior impact upon his/her social world. Viewed from the perspective of motivation in the classroom, the process of internalization refers to the way individuals selectively internalize values and standards from their interactions with others in the ZPD as they engage in the academic practices of the classroom. The process of internalization is active, constructive, and transformative (Walker *et al.*, 2004) so that the goals, values, and standards constructed by the learner cannot be considered to be transmitted by others. Rather, goals, standards, and values are actively modified or changed by the learner in the process of internalization. When standards and values have been internalized by a learner, they are subsequently externalized in the form of motivated action, behavior, and language, so that internalization may be inferred from these expressions of classroom engagement. It is important to recognize, however, that externalization is also an active and transformative process, so that standards and values are transformed as learners externalize them through their interaction with peers and others.

While the notion of internalization has been prominent in the work of sociocultural motivation theorists, transformative externalization and its relevance for understanding motivation and engagement have so far only been raised in the work of Walker and associates (Walker *et al.*, 2004; Pressick-Kilborn *et al.*, 2005). Walker and associates have identified the role that transformative externalization plays in motivated action and explained how this impacts on the social world. While most theorists (e.g., Sivan, 1986; McCaslin, 2004; Walker *et al.*, 2004)

consider internalization to play an important role in motivation and engagement, Hickey has argued that it is of little importance (Hickey, 2003; Hickey and Granade, 2004). In part, Hickey's assertion is based on a lack of recognition of the transformative nature of internalization, but, in part, it is based on the view that goals, standards, and values are tightly bound to the context in which they are constructed, thus making internalization irrelevant to the understanding of motivation. This view is problematic in that it does not recognize that these goals, standards, and values may become personal attributes that motivate engagement in other contexts.

Interpersonal Relations, Intersubjectivity, and Co-Regulation

The nature and quality of interpersonal relationships between students and their teachers and peers are therefore important in sociocultural perspectives on motivation as they influence the internalization and externalization of motivational standards and values. Interpersonal relations and intersubjectivity are also important for understanding the way that learners and their peers regulate each other's activities, and their motivated engagement in those activities. The notion of co-regulation has been developed in the work of McCaslin *et al.* (2004) and refers to the regulation that teachers provide students and that students provide for each other as they work on activities in the ZPD.

Sociocultural Research in Motivation

With the exception of McCaslin's work, only a small number of sociocultural motivation studies have been conducted to date. These studies have been conducted in different motivational domains and while they have adopted differing sociocultural theoretical positions, they all have a commitment to investigating the social nature of motivation. While some of the studies are developed from an explicit Vygotskian theoretical framework (McCaslin, 2004; Pressick-Kilborn and Walker, 2002), others (Nolen, 2001, 2007; Middleton and Perks, in review) do not ground their research in this framework. Most of the studies have been conducted in naturalistic classroom contexts.

McCaslin outlined a number of research projects undertaken over a 20-year period from the mid-1980s to the early 2000s, all of which were based on sociocultural ideas, particularly those related to the ZPD and internalization (McCaslin and Hickey, 2001; McCaslin, 2004). The projects focused on interpersonal relationships at home and in school and were developed from a model of co-regulation which was considered to facilitate the internalization of social supports and promote adaptive

learning. Co-regulation involves the joint control of an activity by all participants involved in the activity and is enacted by negotiation between the participants. Adaptive learning (McCaslin, 2004) was defined as involving “the internalization of goals, the motivation to commit, challenge, or reform them; and the competence to enact and evaluate those commitments” (p. 254). As such, adaptive learning research examined the opportunities various home and school environments and tasks allowed for the integration of both affective and intellectual aspects of learning. An important recognition in these projects was the understanding that co-regulation in the ZPD does not always enhance motivation and learning and may actually impede it. That is, while co-regulation may have benefits for learners, sometimes learners influence and regulate each other in ways that lead to diminished learning outcomes and reduced motivation. Taken together, McCaslin’s (2004) projects illustrate the potential of Vygotskian sociocultural ideas for understanding the following aspects of student motivation: “(1) the function of task opportunity and the enactment of self-directed activity and motivational beliefs, (2) the affordances of teacher classroom management for student-learning cultural rules of responsibility and citizenship (3) the influence of parent beliefs and behaviour on children’s emergent identity and the negotiation of personal commitments at school, and (4) the power of peer participation in student-valuing curriculum tasks, learning motivation, and motivation to learn” (p. 250). McCaslin’s (2004) research demonstrates the relevance of Vygotskian sociocultural ideas for understanding the social nature of motivation while also recognizing the place of the individual within the sociocultural realm.

Pressick-Kilborn and Walker (2002) reported an investigation into the emergence and development of interest in a primary school classroom. In the study, interest was conceptualized as emerging from collaborative activities in a fifth-grade science community of learners. This conceptualization emphasized the dynamic and interdependent relationship between the children and their classroom activities for understanding the development of interest and suggested that traditional distinctions between situational and personal interest were problematic. Studying interest in a real and complex classroom setting presented challenges to distinguishing situational and individual interest along traditional lines. While, in some activities, students participated in ways that indicated an ongoing and more personally meaningful form of interest in learning, the situational aspect of interest was always apparent. Features of tasks, such as their hands-on or collaborative nature, contributed to personal experiences of interest in learning in the context of a real classroom. The analysis of the development of interest in the study drew on the integration of several established sociocultural notions: the idea of a community of learners, the ZPD and its extensions (Valsiner, 1997), and Valsiner’s

(1997) notions of canalization and self-canalization. Canalization refers to the way that cultural practices channel the activities of individuals, while self-canalization refers to the way individuals are able to channel and direct their own activities. The canalization of opportunities in the social world thus creates the context in which values and goals are internalized and from which interest may subsequently emerge. It is important to recognize, however, that individuals may resist these canalization processes.

The investigation extended over a period of 6 months and involved ethnographic observations in the classroom community, and student and teacher interviews. Students also created personal-interest trajectories to indicate their perceived levels of interest in specific science-based activities during classroom lessons and over the duration of the study. These trajectories allowed insights into changing patterns of interest both at the individual and class level. Pressick-Kilborn and Walker (2002) developed individual case studies from their research data and used them to show how the classroom community both promoted and constrained the emergence and development of interest. The case studies illustrated not only how classroom science practices canalize interest development, but also how processes of self-canalization may lead students to resist engagement in these activities, and thus limit their interest development.

Nolen (2001, 2007) investigated, in a longitudinal study, children’s emergent motivation to read and write and its relation to their developing sense of the nature of reading and writing. The study investigated teachers and their students across a 4-year period, from kindergarten to the end of third grade, during which time they were observed in class activities and interviewed annually about reading and writing. The study examined teachers’ goals in literacy instruction and the literacy activities that students engaged in, and drew relationships between these activities, the students’ understanding of the nature and purpose of literacy, and their motivation to engage in literate activities. A particular focus of the research was the way in which teachers and students jointly constructed their literacy activities and, where such opportunities were limited, how students collaboratively reconstructed the literacy activities they were required to engage in.

The first year of the study involving kindergarten teachers and their students was reported by Nolen (2001), although the focus of this publication was on a subset of students who were at risk for reading and writing difficulties. Classroom observations showed that while all of the teachers engaged in common literacy activities, they differed considerably in the variety and amount of time spent in various literacy activities. Teachers differed in the extent to which they gave students the opportunity to read and write connected text, to choose their own subject matter and activities, and in how structured classroom activities were. The teachers

also differed in the extent to which they emphasized the motivation for learning to read and write, skill development, small and large group instruction, multiple task structures, and autonomous student work. Student interviews showed how student understanding of the nature and purpose of literacy is related to commonly employed literacy activities, and how literacy practices and activities are related to student engagement in and liking of those activities.

The remaining 3 years of the study, from grades 1 to 3, were reported by Nolen (2007) and demonstrated that as the social meaning of literate activity was co-constructed in classroom communities, specific motivations emerged in relation to reading and writing. As with the earlier study, the most frequent and valued activities in classrooms had the greatest impact on students' perceptions of themselves as readers and writers. Where the emphasis, for instance, was on writing for self-expression and for authentic reasons (an author's tea involving family and friends) students were developing identities as writers. Some instructional activities also provided opportunities for choice and autonomy while others were more controlling and allowed little room for independent learning. Student motivations, such as interest, enjoyment, mastery, and ego concerns, emerged from these differing instructional contexts and activities. Their motivations and actions were also shown to be related to the students' differing developmental skill trajectories.

Middleton and Perks (in review) present a view of mastery goal motivation as socially constructed through the written dialogic interactions of students with their teacher in a writing course. The study examined the writing and motivational goals of 17 students enrolled in an elective creative writing class in a rural high school in the United States. A writing workshop approach in the class involved students in extended periods of writing as well as regular conferencing with their teacher. The students were also required to keep dialog folders which contained samples of their writing and a written dialog addressed to their teacher concerning their writing and how it was progressing. They were also asked to identify kinds of feedback that would support them in their writing. The teacher collected these folders at the end of every lesson and responded in writing to each of the students. These dialog folders, many over 30 pages in length, were subjected to a layered discourse analysis which focused on the situated identities of the students, the discourses they engaged when writing, the terminology and language used, and the cultural models enacted by the students and teacher. The dialog folders were also analyzed for the enactment of mastery goals.

The findings of the discourse analysis were developed into a model of mastery engagement in the writing domain. The model suggests that students need to situate themselves as learners of the craft of writing and engage

in the discourse of the craft, and students will engage in mastery learning when they adopt the cultural models of the craft. Learning the craft of writing requires the valuing of writing skills, learning the discourse of the craft, and the adoption of the cultural norms and ways of thinking inherent within the discourse. As such, the goal of becoming a good writer is intertwined with the adoption of mastery motivational goals.

Conclusion

Sociocultural motivation theorists are concerned with the social origins of motivation but recognize that individual motivational processes are neither determined by nor reducible to social processes. They use ideas from the Vygotskian tradition, such as the ZPD and transformative internalization and externalization, to explain how motivation has social origins yet individual agency and the relative autonomy of individual motivational processes are acknowledged. These notions have been prominent in sociocultural-motivation theoretical writing and in some of the empirical research reported, and this trend is likely to continue in the future with investigations involving areas such as the ZPD, intersubjectivity, and caring interpersonal relationships also becoming more prominent. Motivation theorists are also likely to explore other sociocultural perspectives, not explicitly based on Vygotskian ideas, in their attempts to explain the social origins and social construction of motivation. Investigations of the social origins of classroom motivation may increase in number as the trend toward studying motivation in naturalistic classroom contexts (Jarvela and Volet, 2004; Perry *et al.*, 2006) continues to gather momentum since classrooms are inherently social environments and are therefore best researched through theoretical approaches which recognize the social nature of motivation.

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Culture in Motivation Research: A Challenging and Enriching Contribution

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Glossary

Culture – In its broad, ethnographic sense, culture, or civilization, is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by people as a members of society.

Emic/etic – An emic account of behavior is a description of behavior in terms that are meaningful (consciously or unconsciously) to the actor, whereas an etic account is a description of a behavior in terms that are familiar to the observer. Scientists interested in the local construction of meaning and local rules for behavior rely on emic accounts, while those interested in facilitating comparative research and making universal claims rely on etic accounts.

Motivation – Commonly defined as an internal state or condition and sometimes described as a desire or want that drives people's behavior and gives it direction. Based on the expectancy-value theory, what motivates behavior is a function of the expectancies one has and the value of the goal toward which one is working.

large extent, arbitrary, the aim being to illustrate a range of unique theoretical and empirical contributions that a culture-based perspective has made to motivation research. Two examples of cultural psychology research have been added to show that emic research from non-Western settings can make a unique contribution by unveiling new dimensions of learning and motivation. The article concludes with a brief discussion on the shortcomings of research and future directions.

Background and Historical Development of Culture-Based Research

The modern epoch of cross-cultural psychology with a coherent research agenda began only in the mid- to late 1960s. Earlier, according to Adamopoulos and Lonner (2001), cultural studies were largely the domain of anthropologists. The main purpose of early cross-cultural psychology research was to test theories, initially developed and validated in Euro-American contexts, in a range of other cultural contexts so that they could claim universality. This culture-label research (typically using a country or an ethnic group as the independent variable) has revealed numerous cross-cultural differences in target variables. However, inherent to their research design, studies representing an essentialist conceptualization of culture could not explain the variations that were observed.

To address this issue, many cross-cultural psychologists have shown interest in identifying and measuring cultural variables that may account for cross-cultural differences. The most well-known cultural variables involve individualism/collectivism (Hofstede, 1980; Triandis, 1994), basic human values (Schwartz, 1994), and independent/interdependent constructions of the self (Markus and Kitayama, 1991). Methodological problems have also been addressed, for example, the psychometric equivalence of data from cross-cultural settings (Van de Vijver and Poortinga, 1982). Overall, however, and regardless of whether the research involves a culture label or adopts a culture-measured approach, this research is problematic according to cultural psychologists because there is an underlying assumption that culture is static and homogenous, and that it can be treated as an antecedent of psychological phenomena.

For cultural psychologists, differences across cultures are the product of unique cultural contexts, where culture

Aim, Focus, and Structure

This article aims to capture the current zeitgeist of research on culture and motivation, embedded in its historical development. Key motivational constructs have been selected and reviewed to illustrate the diversity and richness of culture-based theorizing as well as the range of empirical studies that have examined motivation from a cultural perspective. The article also highlights the salient research trends that have emerged in the last decade and the significant contribution that culture has made to motivation research.

As a background to understanding the development of recent research on culture and motivation, the first section provides a brief overview of critical milestones in the development of culture research in the broader field of psychology. The following section examines five key motivational constructs that have attracted a significant amount of research from a cultural perspective. The choice of constructs and the grouping of studies are, to a

and mind can only be conceived as inextricably connected since they mutually constitute each other (Adamopoulos and Lonner, 2001). It is argued that cultures need to be treated as dynamic processes (Greenfield, 1997) or open systems (Kitayama, 2002) that spread across geographical borders, evolve over time, and are constantly in flux due to changing contextual characteristics (Hong and Chiu, 2001; Kagitcibasi, 1996; Kashima, 2001; Zusho and Pintrich, 2003). The dynamic, complex interface of culture, context, and social cognition is a relatively new trend in cultural and educational psychology research. Accordingly, mainstream motivation research has just begun to explore how the interplay of the cultural aspects of contexts and personal dimensions co-contribute to producing different motivational patterns.

Additionally, similar views to the position of cultural psychologists have been expressed from an indigenous psychology perspective. Although the main motive of the indigenous psychologists is to address the prevailing dominance of the Euro-American mainstream cross-cultural psychology research, their position is consistent with that of cultural psychologists. Their call for the development of theories from within, that is, those developed within non-Western contexts that are therefore more appropriate for such milieus (Sinha, 1998; Yang, 2000), is consistent with the view that cultural systems should be the unit of analysis (Kim and Berry, 1993) in psychological research.

Overall, the major shift in culture-based research from a static, homogenous, decontextualized conceptualization to a dynamic, complex, and contextualized perspective has emerged almost in parallel to recent developments within mainstream research on motivation and learning (Volet, 2004). In the latter, the shift is from studying psychological phenomena with an exclusive focus on the individual (cognitive) toward a person-in-context perspective (sociocognitive), taking account of the location of mental processes in social activities that are embedded in broader social, cultural, and historical contexts (situative, sociocultural perspective) (Pintrich, 2000; Turner and Meyer, 2000; Volet, 2001). In addition, this perspective (situative, sociocultural) stresses the significance of mutual, dynamic interactions between individuals and culturally constituted contexts for the emergence of cognitive, motivational, and learning orientations. Thus, both cultural psychology and the situative perspective highlight the emerging, complex, dynamic, and contextualized nature of culture and motivation.

Motivational Constructs Investigated from a Cultural Perspective

The search through conceptual and empirical material for this article revealed that motivation research from a

cultural perspective is very diverse and spans across a range of theoretical perspectives and constructs. Here, we provide illustrations of the type of theorizing and empirical work that has emerged in recent years with the view to highlighting its richness and significance. As mentioned in the introduction, the selection of motivational constructs and the grouping of studies are, to some extent, arbitrary; therefore, this article does not represent any systematic mapping of the field.

Achievement Motivation, Its Relationship to Effort and Ability

In the 1960s and 1970s, extensive cross-cultural research related to achievement motivation (McClelland, 1961) was conducted in Asian contexts. The purpose was to investigate the roots of achievement motives to better understand the essential underlying psychological mechanisms of achieving societies. A number of empirical studies (e.g., McClelland, 1961, 1965) revealed that Asian samples scored lower on achievement motivation compared to American samples, which was conceptualized at the time as a relatively stable personality disposition learned through independence and mastery training. This type of research was highly criticized in the 1970s for being unable to provide insight into the specific cultural context in which achievement motivation was generated. Maehr (1974), for instance, proposed "a framework . . . that stresses the importance of contextual conditions in eliciting achievement motivation" (p. 887). Similarly, Salili *et al.* (1976) pointed out that motivational patterns could manifest differently across diverse cultural contexts due to varying sociocultural influences. In the 1990s, Yu and Yang (1994) also criticized McClelland's work on the ground that this achievement motivation theory was based on Western middle-class values, which are not generalizable to an Asian setting. Similarly, Salili's (1994) research using a repertory grid technique (based on Kelly's 1955 personal construct theory) suggested that different cultures could share the same dimensions of achievement, but their conceptions of achievement, for example, the meaning attached to success, could vary.

This illustration shows how, in early research on achievement motivation, culture was viewed as the unique, contextual frame for the development of motivational patterns. These patterns, therefore, were assumed to reflect the values and beliefs of the specific sociocultural setting. Simply stated, the view that culture is context was used to explain why motivational orientations and processes have different manifestations across distinct cultures.

Recent work related to achievement motivation (Hufton *et al.*, 2002a) has also endeavored to reveal causal relationships between culture and motivation; however, culture and context have been treated as distinct, and deliberate efforts have been made to interpret the

meaning of the findings in relation to the characteristics of the cultural context. The empirical work of Hufton *et al.*, conducted with American, English, and Russian students, revealed ambiguous relations between the self-perception of academic competence and attribution of achievement to effort and ability. The former two groups appeared more likely to view effort as the cause of high achievement, although they significantly displayed lesser endeavor than their Russian counterparts, who, in contrast and despite working significantly harder, were more likely to ascribe high achievement to ability.

It is noteworthy that Hufton *et al.* (2002b) did not limit the interpretation of their findings in light of the prevailing culture alone. Context was treated separately from culture in terms of schooling and classroom practices, on the grounds that these are expected to shape and build the basis for the emergence of distinct motivation and learning patterns. The authors, moreover, highlighted the significance of not only understanding the meanings attached to the notions of effort, ability, and achievement, but, more importantly, also acknowledged that these may vary within and between cultures. To this effect, they combined their survey with an in-depth qualitative component. Their exploration of the meanings attached, by Russian students, to effort and ability revealed that although a strong emphasis was laid on effort, working hard or effort was considered to be the norm, leading the authors to conclude that "individual differences in ability may be a more salient and discriminating factor" (Hufton *et al.*, 2002b, p. 282). However, based on their additional findings of the conceptions of ability as the result of effort in Russian students, the authors criticized any simplistic and dichotomous conceptualizations of effort/ability.

The value of combining cross-cultural surveys with qualitative studies has also been advocated by Bempechat and Drago-Severson (1999), who called for a qualitative shift in cross-cultural research on achievement motivation. They stressed the significance of exploring the context and culture-specific beliefs about learning, achievement, and motivation to elicit the underlying meanings that individuals attach to these constructs. In their view, subjective perspectives are critical to gaining a deeper and fuller understanding of why learning and motivation patterns are consistent or vary inter- and intraculturally.

The following section pursues the examination of the dichotomous conceptualizations of motivational constructs in a cultural perspective, this time in regard to the self-determination theory, and the constructs of extrinsic and intrinsic motivation.

Self-Determination Theory, and the Constructs of Extrinsic and Intrinsic Motivation

From a Western perspective, the bipolar construct of extrinsic and intrinsic motivation is traditionally conceived

in terms of intrinsic motivation being more beneficial and efficient for learning as it serves as an antecedent for deep learning strategies (Watkins, 2000). This widely shared belief was recently contradicted by Ramburuth and McCormick's (2001) findings, which revealed evidence that the surface strategies were connected with intrinsic motivation for Asian students, whereas extrinsic motivation was linked to deep strategies for Australian students.

Other studies, such as Iyengar and Lepper's (1999), contributed to raising doubts about the Western-based conceptualization of intrinsic motivation rooted in the self-determination theory (Deci and Ryan, 1985, 2000). In short, the self-determination theory postulates that an individual's intrinsic motivation will be higher in situations where options of personal choice are given. Iyengar and Lepper's study found that while this assumption did hold true for their American participants, it failed to predict the motivational tendencies of their Asian sample. The latter group displayed higher intrinsic motivation when task choice was made by significant others, such as their mothers or a valued in-group member, than when they were given the opportunity to choose a task themselves. The authors interpreted their findings in light of Markus and Kitayama's (1991) theory of independent and interdependent self-construal. They argued that while free choice for people from independent societies corresponds to their need for autonomy and personal control, it might harm the need for relatedness of people coming from interdependent societies. In other words, it entails the risk that their personal choice may not be in line with the beliefs and values of important others, and therefore may cause conflict or jeopardize group belongingness.

In this regard, Katz and Assor (2007) argued that having a choice could be motivating when the options meet the choosers' needs for autonomy, competence, and relatedness. Of these, relatedness refers to congruence with the values of the cultures of the choosers, which, as discussed above, is of special importance for members of interdependent/collectivist societies. This assumption is supported by the research of Roth *et al.* (2006), which revealed that on the relative autonomy continuum theorized by the self-determination theory, conformity exists as an intermediate level between external regulation and introjection. The authors concluded that the need for autonomy might be less compatible with Eastern cultures that embrace collectivist values. They suggested future research to examine the relations between conformity, well-being, and performance in collectivist societies.

In light of these findings, which also explored the significance of culture as context in terms of pan-cultural dimensions and self-systems (independence/interdependence), it may be timely to reconsider the bipolar construct of extrinsic–intrinsic motivation. If choice does not play a critical role for people coming from more socially interdependent societies, the fundamental assumptions underlying

this concept can no longer be viewed as appropriate to explain human motivation across cultural contexts. It seems rather, that while the pursuit of self-determination may enhance intrinsic motivation in more independent societies, pursuit of social conformity fulfills that same function in more interdependent societies. However, and as alluded to in the introduction, caution needs to be exercised when explaining differences in motivational tendencies exclusively in light of a global cultural dimension, as it has only limited potential to acknowledge the dynamic nature of motivation across contexts and situations within cultures.

This issue is addressed in the following section when discussing the impact of culturally specific self-beliefs on achievement and motivational orientation.

Attribution Theory, Self-Beliefs about Achievement and Motivation Orientation

In the Euro-American literature, there is a widely shared belief that having confidence in oneself and thinking positively essentially helps and enables people to be successful and to perform at their best. The validity of these beliefs was supported, for example, by Bandura's (1982) research, which revealed that a positive sense of self-efficacy often results in enhanced achievement.

In recent years, however, a number of researchers active in cultural research have cast doubt on this perspective. They suggested that the positive impact of self-confidence might not sustain in cultural contexts other than the Euro-American one (e.g., Fiske *et al.*, 1997; Heine and Lehmann, 1997). Their empirical work in East Asian settings, such as Japan, revealed that, in contrast to the aforementioned shared assumption, it was a person's self-critical view that was positively associated with achievement and motivation.

These findings suggest that motivational beliefs may play out differently across contexts depending on culturally specific self-views. Again, this research treated culture (national culture) as one form of context and assumed it would provide specific opportunities, constraints, and affordances for the development of motivational orientations. For instance, research by Kitayama *et al.* (1997) and Heine *et al.* (2001) provided strong evidence that while the independent self-view (e.g., predominant in the United States) is positively related to self-enhancing motivational strategies, the interdependent self view (e.g., prevalent in Japan) is more likely to be associated with self-improving motivational approaches. Heine *et al.* found that their Japanese participants worked harder on a second task if they had failed to complete the first one successfully, which implies that they were strongly focusing on their weaknesses (self-criticism). In contrast, their American participants worked harder the second time if they previously succeeded in task completion, which suggests that they were motivated by their strengths (self-enhancement).

Notably, the authors' interpretation of these findings was not exclusively based on cultural dimensions of self-construal. Some attention was also given to each group's respective cultural-educational environment, in terms of school culture and university entrance qualification systems, on the grounds that these would have shaped people's lay theories of the self. Dweck and colleagues (e.g., Chiu *et al.*, 1997; Hong *et al.*, 1999) have coined the terms entity theory and incremental self-theories. They argued that while the former refers to the cultural belief that the self is relatively fixed and stable, the latter views the self as adjustable, fluid, and improvable. These culturally based self-beliefs may help explain the different motivational strategies displayed by American and Japanese participants following failure. While the American participants attributed their failure to lack of ability, a fixed, inherited characteristic, the Japanese participants thought that task completion was just a matter of more effort.

Despite these striking differences, it is important to highlight that although diverging motivational strategies were adopted, both groups were striving toward the same goal, namely to do their best. To sum up, it suggests that humans may share similar goals, needs, and desires. However, while the strategies that people adopt in pursuit of these, and the ways in which these are constructed, may depend on cultural elements to some extent, the multiple contextual factors prevalent in specific contexts are also significant. These were only minimally taken into consideration in the research examined so far. The importance of culture and context as distinct constructs is discussed in the following sections on goal orientation as well as agency and self-efficacy.

Goal Orientation, Social Diversity, and Educational Practices

Culture-based research on goal orientation has revealed that the basic constructs of the goal theory show remarkably similar structures across cultural groups (e.g., McInerney, 2003; McInerney *et al.*, 1997; Nelson *et al.*, 2006). Based on that research, it would appear that goal orientation and achievement motivation may not be that dissimilar around the globe.

However, research conducted in the context of multicultural classrooms, for example, by Kaplan and Maehr (1999), showed strong evidence that while task goals were positively related to the sense of school belonging, perceived competence, and self-esteem in minority students, by contrast, ego goals correlated negatively. In this regard, Maehr and Yamaguchi (2001) argued that school cultures that stress and encourage task goals may play an important role in reducing negative and inhibiting aspects associated with social diversity. Most importantly, this strengthens the view that motivational orientations are

malleable, and thus may change in response to specific educational practices.

The respective significance of culture and multiple contextual variables on students' learning and motivational orientations has been investigated by, for example, Salili *et al.* (2001). The authors conducted research with three groups of students, namely Chinese in Hong Kong, European-Canadian, and Chinese-Canadian. The findings were interpreted in light of the sociocultural setting as well as the context of schooling practices (e.g., grading and assessment systems). The study revealed that Chinese-Canadian and European-Canadian students who participated in the same learning environment displayed different learning attitudes and goals. For example, Chinese-Canadian students spent more time studying, received higher marks, and indicated family-oriented goals more often than European-Canadian students. Importantly, observed differences in self-efficacy scores between Chinese-Canadian and Hong Kong Chinese students could not simply be explained by culture alone. Different schooling practices, such as assessment processes and success criteria, were found to play a vital role, with a significant impact on students' self-efficacy beliefs and motivational patterns. Hong Kong students doubted their self-efficacy because despite working very hard, they only received low marks. In contrast, the efforts made by Canadian students were reflected in their examination results.

The findings of this study by Salili *et al.* (2001) illustrate the importance of interpreting motivational orientations in light of the specific cultural milieu and the multiple contextual characteristics that afford and constrain particular learning and behavior patterns. Moreover, the study highlights that a contextualization of research has the potential to reveal stability and change in individual motivation patterns across situations and over time.

The final section addresses the situated nature of individuals' agency and self-efficacy beliefs, and discusses how these evolve differently within and across cultures and contexts.

Agency and Self-Efficacy, Separating Culture and Context

In recent years, a number of researchers, for example, Hernandez and Iyengar (2001) and Kitayama and Uchido (2005), have suggested that cultural differences in motivation may be best explained in terms of distinct agentic modes. The idea is that people coming from cultures that stress independence and autonomy are more personally agentic and their behaviors attributed to dispositional characteristics, whereas people from cultures that emphasize interdependence are more collectively agentic and their behaviors attributed to situations or are even viewed as directed by groups. More specifically, it is argued that

personal agents view the self as the source of agency and essentially display higher intrinsic motivation in situations that involve self-initiated and self-directed actions. In contrast, collective agents perceive agency as emerging from the collective and, in turn, exhibit higher intrinsic motivation for behaviors that are rooted in and directed toward the collective (Kitayama and Uchido, 2005; Markus and Kitayama, 2004).

In the same line of thought, three modes of agency are distinguished in the sociocultural theory: personal, proxy, and collective agency. While personal agency is exercised individually, proxy agency is in operation when individuals influence others to take actions for them. In collective agency, individuals act in accordance with each other to produce collectively desired outcomes (Bandura, 2002). However, Bandura made it explicit that it is of utmost importance to realize that although "the determinants and agentic blends of individual, proxy and collective agency vary cross-culturally ... all these agentic modes need to be enlisted to make it through the day, regardless of the culture in which one happens to reside" (Bandura, 2002, pp. 269–270). Consequently, he also argued that cultural variations in the behaviors of individuals may be best explained in terms of the relative importance attributed to each type of agency in a particular cultural context, rather than the result of entirely bipolar individualist or collectivist modes of agency. Moreover, Bandura stated that regardless of which mode of agency is exhibited, one underlying mechanism is omnipresent, namely efficacy beliefs. The core belief that one has the power and the ability to achieve desired outcomes serves as a baseline for a range of factors that may guide the behaviors of individuals. In other words, cognitive, motivational, affective, and decisional processes are viewed as essentially shaped by an individual's self-efficacy beliefs. However, again according to Bandura, although efficacy beliefs have generalized functional meanings, their emergence, structure, exhibition, and purpose vary across cultural contexts. Additionally, as mentioned above, not all efficacy beliefs are limited to an individual perspective. Collective efficacy beliefs refer to situations where group members act in accordance to a shared belief that a desired outcome can be achieved by joint actions. Again, however, although the focus shifts from the individual to the collective, the basic underlying functions and processes of efficacy beliefs are the same. Consequently, based on Bandura's position, it can be argued that regardless of the cultural context, there is universal commonality in human agency and mechanisms of operations. It is the ways these mechanisms are put in practice and the shapes they adopt that can vary cross-culturally.

Furthermore, researchers such as Bandura (2002), Hernandez and Iyengar (2001), Hong and Chiu (2001), and Kashima (2001) have stressed the contextualized nature of human behavior. They view context as a combination of

a variety of contextual attributes and situational factors that can engender or inhibit human motivation, regardless of the prevalent cultural milieu. For instance, depending on whom a person is interacting with and what the interaction is about, intra-individual differences in behavioral and motivational patterns can emerge. This idea is supported by Freeman and Bordia's (2001) findings that depending on the reference group (e.g., peer, family, academic, and national), participants exhibited different levels of individualistic and collective orientations.

These findings therefore support the significance of situational and contextual factors on the development of behavioral and motivational orientation. Furthermore, they highlight the importance of taking intra-individual as well as within-culture variations into account. Thus, focusing on context and situation-specific characteristics as fundamental for the thoughts and actions of the individuals, rather than exclusively relying on the global construct of culture, essentially enhances the understanding of the dynamic nature of social behavior. In this regard, Volet's (1999) research provided strong support for the benefits of systematically separating culture and context, allowing for the examination of stability and change in the motivational patterns of Singaporean and Australian students in the same educational context and over time. The characteristics of the specific learning settings as well as students' subjective perceptions of these settings were assumed to afford and constrain particular learning and motivational patterns, regardless of the students' cultural backgrounds. Volet found that while the overall achievement motivation remained relatively stable in the group of Singaporean students, more contextualized aspects of their motivation, such as self-efficacy and goal orientation for particular learning activities, changed over time in the new academic setting with its unique configurations of contextual features. Thus, macro-(sociocultural background) and micro-(classroom and instructional practices) level contextual influences, as well as students' subjective perceptions of these, crucially shape the development of motivational orientations and processes that consequently become congruent with the particular cultural-educational context.

Kitayama and Uchido (2005) stated that motivation is universal in all cultures and the ways in which it is constructed depends on cultural values and characteristics. However, while traditional theories of human motivation have postulated personal agency and self-determination as the central drive of all human actions, a growing body of culture-based research suggests that these fundamental assumptions may not be as relevant among members of more interdependent cultures. As elaborated above, it seems that motivational variations may be best explained in light of prevailing sociocultural factors and the interplay of multiple contextual variables, rather than in terms of static, bipolar cultural dimensions that cannot account

for the dynamic nature of culture and motivation, which constantly change over time and across situations.

In the following section, we briefly illustrate how indigenous psychology research can make a unique contribution to expanding and enriching mainstream theories of motivation through unveiling culturally specific conceptions of learning, motivation, and achievement.

Cultural Research from Within

Two Asian scholars, Li (2002) and Ho (1998), provide examples of cultural research from an indigenous perspective. Li's (2002) research, situated in China and focused on indigenous, traditional conceptions of learning and achievement, proposed a new dimension of motivated learning that cross-cultural research had not captured. Her model of "heart and mind for wanting to learn" stresses that knowledge seeking and the cultivation of lifelong learning is of greater value for Chinese learners than achievement itself. The overall aim of Chinese learners, according to her, is to achieve breadth as well as depth of knowledge and, simultaneously, to personally and morally grow through the learning process. Furthermore, the meanings attributed to success/failure and effort/ability in her model remarkably differ from the commonly shared understanding of these notions in Western models. The difference, according to her, emerges as a result of the dialectical reasoning style characteristic of Chinese culture; thus, failure and success are both perceived as essential components of the learning experience. From this perspective, failure is not perceived negatively, but as a sign to work on and improve particular skills, which in turn will help to achieve success in the future. Consequently, Li's Chinese model of learning stresses the impact of effort to achieve learning outcomes. Innateness of ability is not neglected; however, it is also not viewed as a determinant factor because lack of ability can be compensated by substantial effort (Li, 2002). Interestingly, Li's conception of effort/ability appears consistent with the findings by Hufton *et al.* (2002b) in a Russian educational context.

While Li recommends the accommodation of the Chinese conceptions of learning and achievement in existing frameworks for theory enhancement, she does not claim the universality of these dimensions. In contrast, Ho (1998) proposed methodological relationalism as a universally generalizable approach to consider human relationships as culturally defined and, thus, to interpret individual behavior more accurately. Ho grounds his idea of methodological relationalism and the significance of relational dimensions in Asian social psychology. According to Ho, the methodological relationalism approach is critical to capture the inherently social nature of human actions that are invariably embedded in relational contexts. Ho (1998) recommends person-in-relations and persons-in-relation as

useful, universal units of analysis to acknowledge the impact of relational contexts on the thinking and actions of individuals.

These two constructs, postulated by Ho, explain how cultural research from within can provide a unique insight into indigenous perspectives on learning and motivation. This insight is viewed as a crucial prerequisite for understanding and explaining cross-cultural variations because it unveils how participants themselves construct and value the phenomena under investigation.

Research Shortcomings and Future Directions

Focusing on the five key motivational constructs was useful for providing an illustrative picture of the challenging and enriching contribution of culture in motivation research. It highlighted how current theories of motivation, mainly developed and validated through Western lenses, are not always useful for explaining and predicting motivational orientations in cultural milieus different from those in which they originated. For example, the relatively simplistic, dichotomous conceptualizations of ability/effort, success/failure, and extrinsic/intrinsic motivation appear unable to adequately explain cultural variations across contexts, and therefore need to be reexamined and redefined. The moderating influence of culture on relationships between variables was revealed, and emic positions were found useful to highlight how variables can differ across cultures.

The research on culture and motivation is characterized by a number of methodological shortcomings. These involve a dominance of single-context studies that use cross-sectional designs and rely on questionnaire data. Such studies have limited potential to capture the complexity and interacting nature of personal, cultural, and situational influences on emerging motivational patterns. In contrast, studies that involve longitudinal designs and that investigate motivation in multiple contexts have greater potential to reveal stability and change in motivational orientations over time, within and across contexts (e.g., Volet, 1999). This is important because it is only if cultural variations are found across diverse contexts that we can be confident that these represent a real main effect. Acknowledging the moderating influences of culture on the relationships between variables as well as the dynamic, situated nature of both culture and motivation require research designs and methodologies that reflect these more complex conceptualizations. Such approaches also have the potential to unveil intra-individual as well as within-culture differences (e.g., Bandura, 2002).

The current undue reliance on questionnaire data will also need to be reexamined and complemented by other approaches. Van de Vijver and Poortinga (2002) have

argued that multiple approaches are needed to progress with the daunting task of studying the relationship of development and cultural context. They recommend combining qualitative and quantitative research methodologies as well as the use of a variety of models, ranging from simple main effects to dynamic interaction models. A similar approach would benefit research on culture and motivation. There is little doubt that questionnaire data are not well suited to the task of capturing the significance of culturally constituted contexts for individuals' processes of understanding and meaning making of the phenomena under investigation (e.g., Elliott and Bempechat, 2002). Two possible ways of empirically examining and improving the validity of survey methodology in cross-cultural contexts are Rasch measurement (e.g., Andrich, 1978) and cognitive pretesting (Karabenick *et al.*, 2007). While the former allows for the measurement of qualitative differences in the responses of individuals to psychometric items, the latter empirically examines the extent to which respondent's interpretations of items are consistent with the meaning that a particular construct is intended to capture.

To conclude, both sociocognitive and situated theoretical perspectives on motivation have stressed that achievement, self-efficacy, and agency beliefs (to name just a few) are socially constructed. Social constructions include cultural constructions, and both call for qualitative, ethnographic, and emic approaches to complement traditional survey methodologies. As discussed in this article, culture has already made a challenging and enriching contribution to motivation research. Further enhancement in our understanding of the respective contribution of culture and contextual dimensions on motivation requires continuous reexamination of theoretical assumptions within and across multiple cultural contexts, and a variety of research approaches that reflect the complex and dynamic nature of culture and motivation.

See also: Achievement Goal Theory: Definitions, Correlates, and Unresolved Questions; Intrinsic and Extrinsic Motivation; Sociocultural Issues in Motivation.

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Motivating Students in Classrooms

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Introduction

This article focuses on the challenges facing teachers seeking to motivate their students to learn, along with the strategies they might use for doing so. Research on motivation in education has mushroomed, yielding many principles that are both well grounded in good theory and well supported in empirical research. Unfortunately, most of these are difficult to implement consistently in classrooms, so guidelines for teachers emphasize managing conflicting agendas and achieving the best possible compromise, rather than creating and sustaining the ideal.

Motivation in Classrooms as Expectancy × Value Reasoning within the Social Context of a Learning Community

Much of what has been learned about motivation can be organized within an expectancy × value model (Wigfield and Eccles, 2000), which holds that the effort that people are willing to expend on a task is a product of the degree to which they (1) expect to be able to perform the task successfully if they apply themselves and (2) value the task itself or whatever rewards successful task performance will bring. Effort investment reflects the product rather than the sum of the expectancy and value factors because both factors must be present to at least a threshold level. People do not invest in tasks that do not offer enjoyment or valued outcomes, even if they know they can perform the tasks successfully. Nor do they invest in even highly valued tasks if they believe that they cannot succeed, no matter how hard they try.

In addition to their subjective expectancy and value reasoning, students' motivation is affected by their interactions with teachers and classmates. Some classroom climates are supportive of motivation to learn, but others interfere with it. Several recently developed lines of theory and research converge on the conclusion that it is important for teachers to establish their classrooms as collegial learning communities in which students focus on collaborating and supporting one another's learning rather than on self-aggrandizement and competition.

Sociocultural theorists speak of learners as novices undergoing cognitive apprenticeship, under the supervision of mentors, within communities of practice. Everyone

in the community both mentors and learns from others as they collaborate in carrying out the community's activities (Rogoff *et al.*, 2001; Tharp *et al.*, 2000; Wells, 1999). Social constructivist models of learning also depict it as a socially collaborative activity, in which students strive to make sense of new input by relating it to their prior knowledge and collaborating in dialog with their teacher and peers to construct shared understandings (Brophy, 2002; Moll, 1990; Newman *et al.*, 1989). Achievement goal theorists talk about establishing mastery goal structures in classrooms (which focus students on developing knowledge and skills) but avoiding performance goal structures (which encourage students to become more concerned with preserving their self-worth and competing with peers than with mastering the curriculum) (Ames, 1992; Covington, 1992; Ryan and Patrick, 2001; Turner *et al.*, 2002).

These and many other emerging ideas about optimal social contexts in classrooms center around the concept of learning community. Common definitions point to the two key ideas emphasized in the term itself. First, learning implies something more than merely completing academic tasks or even passing tests. School learning is supposed to be enriching and empowering for students, equipping them with important knowledge, skills, values, and dispositions. Second, this learning occurs within a community in which people have social connections and responsibilities toward one another and the group as whole. This implies that the learning will be collaborative as community members encourage and support one another's efforts. Within such a social context, students can feel comfortable asking questions, seeking help, and responding to questions when unsure of the answer because confusion and mistakes are understood as natural parts of the learning process (Baker *et al.*, 1997).

Challenges Facing Teachers in Motivating Students to Learn

Students are motivated to learn when they find classroom lessons and learning activities worthwhile and try to gain the intended learning benefits from them. They may not find these activities pleasurable, exciting, or even interesting, but they engage in them seriously with the intention of pursuing learning goals because they perceive it as worth the effort to do so.

Learning can be enjoyable, but is not fun in the sense that recreational activities are fun. It requires sustained

[†] Deceased

concentration and goal-oriented mastery efforts. In classroom settings, learning situations are complicated in ways that create special motivational challenges for teachers.

First, school attendance is compulsory and the curriculum reflects what society wants students to learn, not what students would choose for themselves. Consequently, teachers often are faced with trying to motivate students to engage in activities they do not value. Second, teachers working with 20 or more students cannot always meet individuals' needs. Some students are often bored while others are often frustrated. Third, classrooms are social settings, so failures often produce not only personal disappointment but also public embarrassment. Fourth, assignments and tests are graded, and reports are sent to parents, which magnifies the consequences of poor performance for struggling students. Finally, teachers and students often settle into familiar routines that become the daily grind. Attention is focused on what must be done to complete activities rather than the knowledge or skills that the activities were designed to develop. Task completion and performance replace motivation and learning as focal concerns (Brophy, 2004).

Expectancy Issues: Supporting Students' Confidence as Learners

The expectancy aspects of motivation involve students' beliefs about their own capabilities. Dweck (1991, 1999) showed that students' engagement in learning activities is affected by their implicit theories about learning ability. Those who subscribe to the entity theory think of ability as a fixed entity over which they have no control, so they are prone to give up and develop helplessness perceptions when they do not succeed easily. In contrast, those who subscribe to the incremental theory believe that ability can be increased incrementally through effort, so they are more likely to persist in their efforts to attain learning goals. Dweck's work implies that teachers should portray learning activities as opportunities to acquire (not just display) knowledge or skill, remind students that mistakes are part of learning, and talk about achieving mastery through successive approximations rather than attaining it quickly and easily.

Weiner (1992, 2001) focused on students' causal attributions – the explanations they generate to explain their successes or failures. Effort and persistence are greater when students attribute their performance to internal and controllable causes. Concerning successful performance, optimal patterns of motivation are associated with attributing success to the combination of sufficient ability and reasonable effort. When students believe that they possessed whatever abilities the task required and were able to meet its demands by applying reasonable effort, they can be confident that they will be

successful on similar tasks in the future. They would have less reason for confidence if they attributed their success to more external, less controllable causes (e.g., the task was easy, I lucked into the solution, I got unexpected help that I probably will not get again).

Concerning unsuccessful performance, effort and persistence are greater when students attribute failures to internal but controllable causes such as insufficient knowledge (of task-relevant information or response strategies) or insufficient effort (they did not prepare or concentrate as much as they should have). These failure attributions enable students to believe that they can improve and ultimately achieve success (by acquiring the needed knowledge or increasing their level of effort). They would have less basis for confidence if they attributed their failures to external causes (e.g., poor textbook or teacher), or worse, to the internal cause of low ability (especially if they had an entity theory of ability). Teachers can encourage productive attributions by portraying learning as acquired gradually through persistent efforts and avoiding any suggestion that failures are due to fixed ability limitations or other factors beyond their students' control.

Self-efficacy perceptions are beliefs in one's capabilities to meet the demands of achievement situations. Students who possess self-efficacy perceptions believe that they can accomplish what the situation calls for, whereas those who lack these perceptions are unsure whether they can succeed or even convinced that they cannot (Bandura, 1997; Bong and Skaalvik, 2003; Pajares, 1996). Teachers can support self-efficacy perceptions by encouraging their students to set specific and challenging but attainable goals, modeling and cueing effective response strategies, providing informative feedback, and helping them to appreciate that they are developing their abilities by accepting challenges and applying consistent effort (Schunk and Ertmer, 2000).

Teachers can support their students' confidence as learners and dispositions to approach learning activities with productive goals and strategies through their approaches to curriculum, instruction, and evaluation.

Curriculum: Program for Success

The simplest way to ensure that students expect success is to make sure that they achieve it consistently. This requires setting tasks at the appropriate level of difficulty (challenging but doable) and then scaffolding their learning efforts through guidance and feedback. Comments on students' progress should stimulate appreciation for their accomplishments to date and imply confidence that they will attain ultimate goals. Both goal setting and feedback are more effective if they focus on the processes or strategies needed to accomplish the task, especially during earlier stages of learning (McNeil and Alibali, 2000; Schunk and Ertmer, 2000; Zimmerman and Kitsantis, 2002).

Instruction: Teach Goal Setting, Performance Appraisal, and Self-Reinforcement

Students may not fully appreciate their accomplishments unless teachers help them to identify and use appropriate evaluation standards. The process begins with setting goals that are proximal rather than distal, specific rather than global, and challenging rather than either too easy or too hard (Locke and Latham, 2002). Students may need help in formulating challenging but reachable goals, especially when perfect performance is unlikely. Richly specified goals help learners to focus on important aspects of the task, motivate their mastery efforts, and empower them with criteria they can use to assess and if necessary adjust their strategies as they work (Page-Voth and Graham, 1999).

In giving feedback, teachers can help students evaluate their performance appropriately, comparing it with absolute standards or their own previous performance rather than with the performance of classmates (Shih and Alexander, 2000). Students who have been empowered with concepts and language needed to evaluate accurately are in a position to reinforce themselves for their successes (that is, attribute them to their willingness to make the needed effort). Students should be taught to think of effort as investment rather than risk: learning may take time and involve confusion or mistakes, but persistence and careful work build knowledge or skills and prepare them to handle more challenging tasks in the future.

Assessment: Emphasize Informative Feedback

Getting and following up productively on informative feedback are integral parts of the learning process, but classroom evaluation and grading systems often undermine students' motivation and learning strategies. If testing and grading are not well matched to everyone's knowledge and skill levels, some students can obtain high grades without exerting much effort and others cannot no matter how hard they try. Assessment information should measure progress toward major instructional goals. Ordinarily, this requires authentic tasks that call for students to integrate and apply what they are learning, not just respond to matching or fill-in-the-blank items (Ames, 1992; Butler, 1987; Crooks, 1988; Wiggins, 1993).

Most motivational researchers advise teachers to include safety nets by allowing failing students to take an alternative test (following a period of review and relearning) or to earn extra credit by producing some product to indicate that they have overcome the deficiencies identified in their test performance. This encourages struggling students to make the extra efforts needed to accomplish the instructional goals (Brophy, 2004).

Certain students become highly anxious and perform considerably below their potential in tests or during any test-like situation in which they are monitored and

evaluated. Several strategies have been developed for minimizing these test anxiety problems: Explain each test's general scope and nature, and how students can best prepare for it; be friendly and encouraging when administering the test; avoid time pressures unless they are truly central to the skill being taught; portray tests as opportunities to assess progress rather than as measures of ability; and teach students effective test-taking skills and attitudes (Hembree, 1988; Hill and Wigfield, 1984; Neveh-Benjamin, 1991; Wigfield and Eccles, 1989; Zeidner, 1998).

Value Issues: Helping Students See Learning Activities as Meaningful and Worthwhile

Whereas the expectancy aspects of motivation surround the question, "Can I do this?", the value aspects surround the question, "Why should I?" Eccles and Wigfield (1985) suggested that subjective task value has four major components: (1) attainment value: the importance of attaining success on the task in order to affirm our self-concept or fulfill our needs for achievement, power, or prestige; (2) intrinsic or interest value: the enjoyment we obtain from engaging in the task; (3) utility value: the role that engaging in the task may play in advancing our career or helping us to reach other larger goals; and (4) cost: the time, effort, and other resources that must be committed to the task, as well as the lost opportunities to devote these resources to other agendas.

Addressing the value aspects of motivation involves inducing students to view their engagement in lessons and learning activities as worthwhile (benefits exceed costs). Traditionally, teachers have been advised to accomplish this either by offering incentives for good performance (extrinsic motivation approach) or by emphasizing content and activities that students find enjoyable (intrinsic motivation approach).

Extrinsic Motivation Approaches

Extrinsic rewards are popular because teachers enjoy giving them and students enjoy receiving them. However, they support motivation to learn only under certain circumstances. First, it is important to deliver rewards in ways that provide students with informative feedback and call attention to significant achievements. This encourages students to apply themselves to their studies because doing so empowers them with knowledge and skills, not just because it can lead to extrinsic rewards (Sansone and Harackiewicz, 2000).

In addition, rewards can act as motivators only for those students who believe that they have a chance to gain them. Opportunity to earn a reward by obtaining a high grade will be motivating to high achievers, but demotivating to

students who have little chance to earn such a grade. Thus, using rewards effectively requires individualized success criteria that allow all students to have comparable access to the rewards. An alternative that avoids this problem is to give rewards only to the class as a whole ("I know that you all put a lot of work into your projects. As a token of my appreciation for your efforts..."). Celebrations of everyone's efforts and progress also are more in keeping with the spirit of a learning community.

Teachers' praise is another potential source of extrinsic motivation, but again, it is important to deliver it effectively. Students are likely to be motivated by sincere praise delivered privately or through notes on returned assignments, but not by being singled out publicly, especially for things that are not significant achievements (such as sitting up straight and paying attention). Effective praise and encouragement communicate appreciation and informative feedback (not evaluative judgments). They focus on the effort and care that students put into their work, their gains in knowledge or skill, or their achievement's noteworthy features (meanwhile avoiding attributions of success to high aptitude) (Brophy, 1981; Caffyn, 1989; Henderlong and Lepper, 2002).

Intrinsic Motivation Approaches

The intrinsic motivation approach involves emphasizing content that students are interested in and activities that they enjoy. Interesting activities provide learners with forms of input or opportunities for response that they find rewarding and want to pursue (Renninger and Hidi, 2002; Schraw and Lehman, 2001). This may be because the activities are perceived as relevant or useful; are simply enjoyable or sources of fun; provide self-actualization potential by allowing students to feel empowered or creative; are meaningful or satisfying because they allow students to experience new understandings or gain new skills that they value; or provide opportunities for identification or self-projection (as when they identify with the hero of a story). For example, most students enjoy collaborating in pairs or small groups, activities that provide opportunities to use a wide variety of skills (e.g., conducting and reporting research) rather than limiting them to boring repetition (e.g., filling in blanks on a worksheet), and activities that allow them to create a product that they can point to and identify with (e.g., a display or report) (Alleman and Brophy, 1993-94; Askell-Williams and Lawson, 2001).

Other intrinsic motivation approaches involve adapting school content or activities to students' interests (Renninger, 2000; Schraw *et al.*, 2001). For example, Hidi and Baird (1988) found that interest in texts was enhanced when their main ideas were elaborated through insertions that featured: (1) character identification (information about people with whom the students could identify, such as the inventors whose discoveries led to the knowledge under

study); (2) novelty (content that was new or unusual); (3) life theme (connections to students' lives outside of school); and (4) activity level (intense activities or strong emotions). Teachers also can stimulate students' curiosity or whet their anticipation by introducing content in ways that create a need to resolve some ambiguity or obtain more information about the topic, or by asking questions to put students into an information-processing or decision-making mode (Blank and White, 1999; Reeve, 1996).

Teachers' beliefs about effective motivation strategies emphasize intrinsic approaches: cooperative learning, stimulating tasks, opportunity to make choices, simulations, projects, learning games, relating content to current events, hands-on activities, and personalized content (Hootstein, 1995; Nolen and Nicholls, 1994). However, teachers typically focus on finding enjoyable activities or adding interesting elements to content rather than on helping students to develop appreciation for the content itself (Zahorik, 1996). Hands-on activities will not produce important learning unless they include minds-on features that engage students in thinking about big ideas.

The self-determination theory of Deci and Ryan (1985, 2000) has been a major source of ideas about supporting intrinsic motivation in classrooms. As part of developing their core thesis that in order to experience a sense of well-being, people require social contexts that meet their three basic needs for autonomy, competence, and relatedness, self-determination theorists have been exploring what is involved in creating autonomy-supportive contexts in classrooms. Operating from intrinsic motivation typically involves exercising autonomy and making free choices. In contrast with controlling contexts, which pressure students to think, act, or feel in particular ways, autonomy-supportive contexts minimize extrinsic performance pressures, provide students with choices, encourage them to solve problems in their own ways rather than insisting on a single method, and invite them to ask questions and suggest ideas for learning activities. Autonomy-supportive teachers empathize with the student's perspective, seek to facilitate independent thought and decision making, and provide meaningful rationales when choice is constrained. In contrast, control-oriented teachers overmanage their students using detailed instructions backed by rewards, grades, and threats (Reeve *et al.*, 1999; Valas and Sovik, 1994; Vansteenkiste *et al.*, 2006).

Teachers often can allow their students to choose among task alternatives or to exercise autonomy in pursuing alternative ways to meet curricular requirements. For example, they might allow students to select topics for book reports, composition assignments, or research projects, and perhaps also to select from alternative ways of representing their work. When students are likely to make undesirable choices if left completely on their own, teachers can provide a menu of choices to select from or help them make choices that are well suited to their interests and reading levels (Starnes and Paris, 2000; Worthy *et al.*, 2002).

Motivating Students to Learn

Mitchell (1993) distinguished between catching students' interest and holding it. He found that presenting students with brainteasers or puzzles or allowing them to work on computers or in groups were effective for catching initial interest, but not for holding that interest in ways that led to significant learning. The best outcomes were associated with meaningful content (students could appreciate its applications to life outside of school) and instructional methods that fostered involvement (active learning and application activities, not just watching and listening). Other research similarly concluded that the key to motivating students to learn is to structure the curriculum around big ideas and develop them with emphasis on their connections and applications to life outside of school (Hickey *et al.*, 2001; Newton, 2000; Pugh, 2002; Reeve *et al.*, 2002).

Students do not need to enjoy school activities in order to be motivated to learn from them, but they do need to perceive these activities as meaningful and worthwhile. Therefore, teachers need to make sure that their curriculum content and learning activities are in fact meaningful and worthwhile, and then develop the content and scaffold students' engagement in the activities in ways that enable students to appreciate their value.

This begins with content selection and representation. If planning is guided by purposes and goals phrased in terms of desired student outcomes, the curriculum should feature content that students can appreciate as worthwhile and activities that they can appreciate as authentic. The bulk of such a curriculum will consist of coherent networks of connected content structured around powerful ideas. These ideas will be developed in sufficient depth to promote deep understanding of their meanings and connections, appreciation of their significance, and exploration of their applications to life outside of school. As much as possible, this learning will occur through engagement in authentic activities that require using what is being learned for accomplishing the very sorts of life applications that justify inclusion of the content in the curriculum in the first place.

Good content development includes conveying reasons why the content's big ideas are worth learning, explaining when and why they might be used, and modeling how it looks and feels when we use them. Coaching should include goal reminders and encouragement of students' appreciation for the learning domain, and feedback should call attention to developments in students' knowledge or skills, to signs of artistry or craftsmanship in their work, or to unique signature elements that reflect their personal style of operating in the domain (Brophy, 2004).

Optimally mediated learning experiences raise students' consciousness of the purposes and goals of each activity and help them learn not only with understanding but also with

appreciation and life application. Appreciation connotes that students not only understand what they are learning but also value it because they realize that there are good reasons for learning it. These reasons may include not only practical applications but also ways that the learning might enrich the students' repertoires of insights and recognitions or otherwise enhance the quality of their inner lives. Life application implies that the students experience authentic activities that will enable them to apply what they are learning to their lives outside of school.

Conclusion

In conclusion, most discussions of motivation in classrooms emphasize extrinsic praise and rewards or intrinsic motivation strategies for making learning fun, but research findings point to structuring the content around big ideas developed with emphasis on their connections and applications as the key to motivating students to learn. The best results will occur when teachers combine this approach to the value aspects of motivation with an approach to the expectancy aspects that supports all students' confidence as learners and an approach to classroom management that emphasizes learning community principles.

See also: *Self-Efficacy Beliefs; Sociocultural Issues in Motivation.*

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EMOTIONAL EXPERIENCES

Affect, Mood and Emotions

Emotion in Educational Contexts

Cognition and Emotion

Poverty, Effects of on Social and Emotional Development

Social and Emotional Outcomes of Learning

Wellbeing

Empathy

Anxiety

Impact of Assessment on Students' Test Anxiety

Educating Students with Emotional and Behavioral Disorders

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Affect, Mood and Emotions

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Definitional Issues

Despite a considerable body of literature dedicated to the scientific study of affect, there is surprisingly little consensus on some of the most basic concepts related to affect. To some extent, definitions relating to affective processes are specific to certain research traditions. For example, whereas some theorists consider the conscious experience of emotion one of its central features, others propose that emotional processes can also take place entirely outside of conscious awareness. There is broad agreement, however, that affect comprises both emotion and mood, which differ regarding their object and temporal constraints. An emotion typically follows a specific eliciting stimulus or event, and is intense but limited in duration. Certain action tendencies, such as whether one is more likely to approach or avoid the target of one's current emotional feeling, are associated with specific emotions. These action tendencies do not imply that the person will necessarily engage in that action; however, in principle, a readiness to engage in the action is present. A mood, on the other hand, is usually not attributable to a specific stimulus, is of low intensity, and of longer duration. Since the source of a mood is often ambiguous, the feeling can be incorrectly attributed to a stimulus under consideration, thus leading to various types of affective influences on evaluation and cognitive processing, as are discussed in more detail further below.

Emotions can be classified along two orthogonal dimensions, namely valence and arousal. Valence refers to whether the experience is positive or negative, and thus reflects the value of a given object or situation. Arousal refers to whether the person experiences a state of activation or deactivation, and signifies whether the event is important or trivial. Other classifications of emotions have involved categorizing them with regard to specific action tendencies, such as approach and avoidance. For example, although anger and sadness are both subjectively negative experiences, anger is considered an approach emotion because an angry person is inclined to confront the source of their anger, whereas sadness is considered an avoidance emotion because a sad person is likely to withdraw from other people.

Since affect can either pertain to emotion or mood, affective feelings refer to the subjective experience of emotions or moods. Such affective feelings can be distinguished from those that are nonaffective in nature, such as hunger, thirst, or boredom. Usually, convergent affective cues are

provided by multiple response systems, including subjective experience, cognitive processes, hormonal changes, physiology, motor behavior, and expressive behavior such as facial expressions, postures, and vocal signs. Both cortical and subcortical neural subsystems are thought to coordinate these multiple response systems. Affective processes are scientifically measured by tools closely relating to the different response systems. Such measures include self-reports (e.g., emotion rating scales), observational data (e.g., of facial expressions and instrumental actions), psychophysiological measurements (e.g., heart rate, skin conductance, and electromyography), and brain imaging techniques (e.g., functional magnetic resonance imaging (MRI) and electroencephalogram (EEG)).

Many issues in the study of affect have created great controversy and are still being debated. For example, whether there is a fixed number of basic emotions continues to be a matter of dispute. Some researchers have argued that evidence for culturally universal facial expressions of happiness, sadness, anger, fear, disgust, and surprise suggests a special status for these emotions, relative to others. Other researchers maintain that facial expressions are, however, one of many facets of the emotional experience, and do not provide enough evidence to suggest a privileged status of those relative to other emotions. Indeed, definitional issues of emotion are intricately linked to theoretical positions, with varying emphasis placed on the necessary and sufficient components of an affective experience. As will be reviewed below, different research traditions have emphasized functional, embodied, or cognitive components, and although they differ in the extent to which they consider one or the other primary, they have contributed to the general understanding of affective phenomena.

Components of Affect

Functional Aspects of Affect

Affective processes have historically often been contrasted with rational processes; however, it has become increasingly apparent that this is not a useful distinction because many affective phenomena are, at least in principle, functional in nature. Charles Darwin was among the first to scientifically study emotion from a functional perspective by exploring its evolutionary underpinnings.

There is widespread agreement that the function of emotion is to facilitate social interactions with conspecifics,

and to facilitate rapid responses toward potentially harmful aspects of the environment. As far as social relationships are concerned, comparative research has established that in animals and humans alike, early experiences with the primary caregiver are critical for affective functioning in later life. The attachment system ensures a warm and caring relationship between the child and caregiver, and this primary relationship results with the child developing an internal model of social relationships. Deficits in this early relationship can have detrimental effects on social and romantic relationships later in life. Although the attachment style is relatively stable and can have profound consequences on one's emotional responses within social relationships, it can be altered through specific efforts, for example, in the context of psychotherapy.

Presumably because of their evolutionary origins, affective responses toward certain stimuli are stronger than toward others. For example, human and nonhuman primates are especially likely to develop negative attitudes to snakes and spiders, whereas this is not the case for neutral stimuli such as flowers or mushrooms. The evolutionary argument for this preparedness in learning is that primates who differentially learned to avoid snakes, spiders, and other potentially harmful stimuli had a greater chance of survival than those who did not.

In addition to these basic ways in which affective processes can be considered evolutionarily adaptive, affective influences on cognitive processing have also been discussed as providing useful informational feedback about the state of the environment. On a general level, affective feelings provide feedback about whether something is good or bad. More precisely, they provide one with information about the momentary value of objects and situations. When making evaluative judgments and deciding whether something is desirable or not, people attend to their own feelings, as if asking themselves: How do I feel about it? The experience of these felt evaluations serves as information. Thus, people generally like what they feel good about and dislike what they feel badly about. As a consequence, affective feelings have been shown to influence ratings of life satisfaction estimates of risk, and many other judgments. In addition, many attitudes are shaped by affective processes.

Affective cues, however, are not only informative when interpreted as evaluations of objects and situations, but can also be interpreted as performance feedback while working on a task: positive feelings serve as success feedback, indicating that the current cognitive strategy is adequate, whereas negative feelings serve as failure feedback, indicating that a different cognitive strategy should be pursued. As a result, being in a good mood makes people more likely to process incoming information in relation to easily accessible knowledge, expectations, and heuristics; that is, a good mood facilitates top-down processing. In contrast, being in a bad mood makes people more likely to rely on

uninterpreted perceptions and analytical processing; that is, a bad mood facilitates bottom-up processing. Affective feelings, therefore, directly concern adaptive actions as well as which actions work well in pursuit of a goal or which ones might better be abandoned.

Contextual constraints can qualify emotional experiences on several levels. First, affect is embedded in a social, cultural, and historical context, and the meaning of affective practices is constructed in relation to this context. Modern-day research has confirmed that some aspects of emotion, such as the facial expressions of a number of emotions, are universal. Cultural variability exists, however, with different culture display rules regulating the contexts in which it is acceptable to publicly express an emotion. For example, in Western societies where a considerable emphasis is placed on feeling unique and independent, emotions like pride are more socially acceptable than in some Eastern cultures (e.g., Japan) where fitting into an interdependent community is more important. In these interdependent cultures, emotions that are defined by interpersonal demands, such as shame or guilt, serve to maintain social relationships.

Second, once emotions are experienced within this contextual background, they provide important information to the individual concerning what is good or bad. However, exactly how this information serves as evaluative feedback depends on the situation in which the emotional feelings are interpreted, or more precisely, toward what they are experienced. For specific emotions, such as feelings of anger, fear, happiness, etc., what object they are felt toward is usually clear. In contrast, more subtle moods, such as feeling mildly good or mildly bad, usually do not have a clear object attached to them and, thus, the source of these moods remains ambiguous. Since moods lack specificity and are therefore unconstrained regarding their informational value, they can be misinterpreted, or misattributed in various ways: people tend to report feeling more satisfied with their lives on a sunny day than on a rainy day; that is, people's judgments can be influenced by irrelevant affect from an external source such as the weather, provided they are not focally aware of this irrelevant source as the cause of their feelings. However, simply asking about the weather before obtaining judgments of life satisfaction is sufficient to eliminate the effects of weather on these judgments. Thus, a central finding in the affect literature is that irrelevant affective states influence judgments and cognitive processing only as long as their source is kept ambiguous. When this is the case, feelings are experienced as relevant to whatever is currently on one's mind, and the meaning of affective feelings depends on the current agenda of a person.

Overall, the functionality of affect is evident directly in the way people deal with certain stimuli in the environment, and indirectly in the way people cognitively process information about the environment.

Embody Aspects of Affect

Emotion research has a long history of studying embodied aspects of experience. William James argued that the experience of emotion reflects the experience of bodily changes. According to this view, bodily sensations determine the subjective experience of emotion. Although this view has been criticized at times, it currently enjoys renewed support as a consequence of recent developments in the research area of embodied cognition. A direct consequence of the view that embodied cues constrain subjective experience is that emotional feelings can be regulated, and even initiated, by intentionally manipulating a person's physical state. For example, when a person is induced to put on a smile, the person is likely to report feeling happy. Similar evidence also has been obtained when research participants are induced to adopt postures characteristic of certain emotional states, such as fear, anger, or sadness. This research suggests that people read their emotional bodily behavior, and may experience their emotional physical states as emotional feelings. In other words, rather than being epiphenomenal to the experienced feeling of emotion, some theorists have argued that these bodily changes actually constitute the emotion and causally influence the feeling.

In addition to obvious emotional bodily cues such as facial expressions and emotional postures, other bodily cues can also be interpreted as providing affective information in appropriate contexts. For example, motor behaviors that are associated with agreement or disagreement have shown to influence attitudes. When research participants were induced to produce a vertical head movement, resembling head nodding, while listening to a communication about increasing tuition at their university, they were later more likely to agree with the tuition increase than participants who had been induced to produce a horizontal head movement resembling head shaking. Similarly, performing simple motor behaviors that are typically associated with approach behavior results in more liking of neutral stimuli than engaging in avoidance behavior. Presumably, people typically approach positive things and avoid negative ones, and finding themselves engaging in these behaviors produces the inference that an attitude object is more or less positive.

Considerations of the physicality of emotional experiences have increasingly involved the study of the brain. In particular, subcortical structures in humans and other mammals are considered fundamental in the subjective experience of emotion because of their direct connections with the hypothalamus, which in turn controls functions of the autonomic nervous system (heart rate, arousal, etc.) and the hormonal system. Subcortical structures are thought to be involved in the primary evaluation of the affective stimulus's valence as either positive or negative, and its importance of being personally relevant or

irrelevant. Although other subcortical structures are also critically involved, the amygdala appears especially important in this respect. The amygdala, which has been studied extensively in the processing of fear-eliciting stimuli, influences the cortex directly in order to provide an initial evaluation of a stimulus situation outside of conscious awareness. Evidence for this notion comes from the finding that whereas fear can be experimentally conditioned in the absence of cortical involvement, a conditioned fear response is absent after damage or removal of the amygdala. In addition, the amygdala activates cortical arousal systems of the brain which alert the organism to prepare itself for appropriate action. In other words, the amygdala serves two purposes at the very onset of an emotional experience: Direct projections to the cortex provide specific information about the stimulus situation, and nonspecific cortical arousal makes the organism ready for potential action.

The notion of cortical involvement in emotional processing is widely accepted, presumably because it has become clear that cognitive appraisals (see below) can modify a person's physical and subjective emotional experience. An early demonstration of the importance of the cortex in emotional experience was the famous case study of Phineas Gage, who, as a consequence of an accident, lost large sections of his prefrontal cortex, leading to profound deficits in emotional functioning for the rest of his life. Other individuals suffering from prefrontal brain damage have been studied using modern brain imaging techniques to localize specific brain lesions, and how these relate to abnormal affective experience. These patients tend to exhibit flat affect, that is, they do not appear to be experiencing any emotions at all, based on what can be inferred from their openly expressed emotions. Although it was initially suspected that perhaps only the expressive, rather than the experiential, component of emotion might be impaired, data regarding physiological reactivity suggested otherwise. Whereas healthy individuals show characteristic physiological reactions to an emotional stimulus, patients with specific damages confined to the prefrontal cortex do not show, for example, skin conductance responses to emotionally disturbing stimuli. However, these patients still indicate that they cognitively know that the stimuli are disturbing and ought to elicit negative emotions. Thus, although the knowledge about appropriate emotional reactions is still intact and accessible, conscious emotional feelings cease to exist in patients with certain prefrontal cortical impairments. Interestingly, in addition to their impaired affective functioning, these patients also show deficits in decision making because they appear unable to generate hypothetical mental scenarios that would help them to selectively choose among several options. Thus, contrary to the assumption that emotional feelings need to be controlled to allow for

rational thinking, the absence of emotional feelings can be even more debilitating as far as efficient, adaptive decisions are concerned.

Cognitive Aspects of Affect

In the 1960s, researchers advanced the notion that emotional experiences involve an evaluation to determine their relevance for the individual. This conception was later expanded to include a primary appraisal of determining personal relevance, and a secondary appraisal that involves assessing one's ability and resources to cope with the emotional situation. Further elaborations of appraisal theories have explicated how specific appraisals lead to the experience of distinct emotional feelings. Cognitive approaches of affect, including appraisal theories, suggest that affective states can be modified by changing the cognitive component of the emotion. Many emotion-eliciting events can be cognitively reappraised or given a different meaning; as a consequence, the quality of the experience changes. For example, the feeling of anger after waiting in vain for a friend can give rise to the feeling of worry after learning that the friend was in a car accident. Thus, the same phenomenological experience, the bodily cues associated with an emotion, can be interpreted differently depending on the situational context and one's cognitive appraisal. Research on the self-regulation of emotion indicates that it is more beneficial to reappraise emotion-eliciting stimuli rather than trying to suppress an emotional reaction once this response has already occurred.

Appraisal processes have been implied as one component of emotional intelligence, which is considered a person's ability to appropriately identify and utilize emotional responses. Emotional intelligence consists of four aspects: (1) perceiving the emotion, and accurately identifying it, both in oneself and in others; (2) using appropriate emotions to solve problems and enhance cognitive processes; (3) understanding the elaborate interconnection of various emotions, and their potential consequences for oneself and others, for example, in the context of flexible planning; and (4) regulating or managing one's emotions effectively, which not only aims at not getting overwhelmed by emotions, but also not suppressing or denying them when they occur. Indeed, suppressing the outward expression of emotion can be associated with impoverished cognitive functioning (e.g., decreased memory performance), presumably because controlling one's emotional responses is effortful and takes up resources that could otherwise be dedicated to cognitive processing.

Modeled along widely used intelligence tests, assessments of emotional intelligence have been developed to test individual differences in the extent to which people understand and utilize their emotions. Such test scores

have been successfully used to predict the quality of social relationships, as assessed by individuals themselves and their family members and peers. In addition, there appears to be a negative relationship between emotional intelligence and various deviant and antisocial behaviors. For example, people scoring high in emotional intelligence are less likely to engage in bullying behavior or abuse drugs than those who score low. Additional research efforts will need to clarify the developmental trajectories of emotional intelligence, and the extent to which it can be taught in schools and other educational settings.

In addition to differences in emotional intelligence, variability in affective styles has been observed, with some individuals apparently being more prone to experience positive emotions than others who are more prone to experience negative ones. Further findings have established that these differences are relatively stable, with some people reporting consistently higher levels of happiness than others throughout the course of their lives. Surprisingly, once the basic human needs such as adequate shelter, food, and social ties are taken care of, wealth, material possessions, and other situational factors appear to only be weakly associated with increased happiness, suggesting that a person's level of happiness has a strong genetic component and is not influenced heavily by contextual factors. These differences in affective style have been documented as being associated with specific types of brain activity. Both in infants and adults, hemispheric dominance has been invoked in the experience of positive and negative emotions, with left-sided activation being associated with higher levels of self-reported positive affect. In general, the left hemisphere of the brain shows relatively greater activation with approach-related, positive emotions, whereas withdrawal-related, negative emotions show greater right-sided activation.

Summary

Although some central definitional issues in the field of affective studies remain to be controversial, the field has been accumulating considerable empirical evidence for certain core findings. This includes emphasizing relative contributions of bodily and cognitive influences and how they might have evolved in the course of evolution. In addition, findings through research with subcortical structures and the influence of bodily cues highlight the embodied aspects of affect. Similarly, approaching affect from a cognitive perspective illustrates how it can be altered through cognitive processes and appraisals. These varying theoretical perspectives of affect and their corresponding findings illuminate its complex nature, and it is only with more research that affect can be fully understood and these findings may be integrated.

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Emotion in Educational Contexts

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Emotions in Educational Contexts

Educational activities tend to generate affective experiences for those involved in such activities. As such, emotions permeate educational contexts and affect everyone in the schooling process. A recent example is the accountability movement in the United States that has brought with it an increase in the use of high-stakes testing and associated emotional experiences (pleasant and or unpleasant) for students, teachers, and parents (Nichols and Berliner, 2007). Specifically relating to teachers, the current high attrition and early retirement rates of teachers in a number of countries around the world have been linked to unpleasant affective states such as anger, stress, anxiety, and burnout (Wilhelm *et al.*, 2000; Wisniewski and Gargiulo, 1997). Thus, understanding the nature of emotions in educational settings may be a key to successful educational experiences for students, teachers, and parents.

The increased interest by scholars in issues related to emotions in education has resulted in a growing number of educational journals devoting special issues to this topic (e.g., *Educational Psychologist*, 2002; *Learning and Instruction*, 2005; *Teaching and Teacher Education*, 2006; *Educational Psychology Review*, 2007) and several recently published books regarding emotions in education (Boler, 1999; Schutz and Pekrun, 2007; Zembylas, 2005). This suggests a perceived need to better understand the nature of emotions in education.

In this article, we describe some current inquiries related to emotions in education. We begin by discussing the concepts we used to describe emotional experiences and explicate some of the current research on student emotions. This is followed by a discussion of the current work concerning teachers' emotional experiences. We conclude with suggestions for potential future directions for research on emotions in education.

What Are Emotions?

Due to the variety of terms used in the academic literature and everyday speech, we must first clarify our approach on emotional experiences. We currently conceptualize affective experiences as being organized into three interrelated constructs – affective tendencies, core affects, and emotional experiences.

Affective Tendency

Affective tendency is a predisposition toward certain ways of being in the world (Lazarus, 1991; Rosenberg, 1998). This propensity for particular ways of being tends to develop through transactions among a variety of sources such as socialization, individual beliefs, temperament, approach/avoidance motives, and personality. These affective tendencies provide a lens through which individuals view their transactions in the world. Thus, if one is predisposed to view the world as a scary place, one is more likely to interpret various situations as being potentially frightening and may have more frequent fear-type emotional experiences.

Core Affect

Core affect is essentially how we feel at any particular point in time. Researchers in this area suggest that core affect is fundamentally a combination of two types of feeling continuums – valiance (pleasant to unpleasant) and arousal (low activation to high activation) (Linnenbrink, 2007; Russell, 2003; Russell and Barrett, 1999). Thus, at any particular point in time we may feel calm (low activation and pleasant), tense (high activation and unpleasant), or happy (pleasant, high activation). Mood, which is one example of core affect, can be viewed as a prolonged core affect without an object. Russell (2003) suggests that core affect is object free but can become directed at an object through attributions or appraisals. In these instances, the affect experience is usually described as an emotional experience.

Emotional Experience

Schutz *et al.* (2006) described emotional experiences as "socially constructed, personally enacted ways of being that emerge from conscious and/or unconscious judgments regarding perceived successes at attaining goals or maintaining standards or beliefs during transactions as part of social-historical contexts" (p. 344). There are two key aspects of this definition that are relevant to our discussion here.

Appraisals and emotional experiences

First, emotions involve judgments or appraisals (Boekaerts, 2007; Pekrun *et al.*, 2007; Schutz *et al.*, 2007). As suggested above, core affect tends to become an emotional experience

via appraisal or attribution regarding what is happening during a particular episode. Individuals' goals, values, and beliefs, as well as their social network are the referent points used to judge where they are in relation to where they want to be (Carver and Scheier, 2000; Schutz and DeCuir, 2002; Schutz and Davis, 2000; Powers, 1971). These goals, values, and beliefs represent ways individuals, as members of social groups, position themselves during a particular life event (Boekaerts, 2007; Ford, 1992; Markus and Nurius, 1986; Schutz *et al.*, 2001).

Thus, appraisals involve students' or teachers' perceptions of how the pursuit of a goal progresses during an academic transaction. In most cases, these judgments tend to occur outside of the students' or teachers' awareness, yet these judgments are seen as being key to the emotional experience (Frijda, 1993; Lazarus, 1991; Pekrun *et al.*, 2007; Schutz and Davis, 2000; Smith, 1991). Lazarus (1991, 1999) made a distinction between primary and secondary appraisals. He indicated that primary appraisals deal with how important the outcome is perceived to be by the teacher or student. For example, if a student does not see homework as important, there is probably little potential for emotions related to homework. For primary appraisal, Lazarus (1991, 1999) talks about judgments related to goal relevance (i.e., is it important to the student's goals?), goal congruence (i.e., is it going how the student hoped it would?), and the type of ego involvement (i.e., how much of the student's self or one's identity is involved?).

Secondary appraisals are the judgments a student or teacher would make about their potential to handle the particular situation. Key secondary appraisals are related to agency or control (Lazarus, 1999; Pekrun *et al.*, 2007; Schutz and Davis, 2000) and problem efficacy (Bandura, 1997; Schutz and Davis, 2000), or what Lazarus (1991) referred to as coping potential (i.e., the person's confidence about their ability to handle the situation). These secondary appraisals help differentiate among potential emotions. Consequently, a situation that has been appraised as goal important (i.e., "It's vital for my students to do well on this standardized test") and goal incongruent (i.e., "My students did really badly on that test"), with secondary appraisals of self-blame (i.e., "I knew I should have done a better job of teaching") may result in shame (Turner and Waugh, 2007). Alternatively, the same situation with secondary appraisals of other blame (i.e., "These standardized tests don't measure what my students know") may result in anger.

Social construction of emotional experiences

Schutz *et al.* (2006) also suggest that emotions are socially constructed and emerge from particular social-historical contexts. In other words, emotions are relational, such that emotional experiences do not exist as exclusive features of a person or of an environment (Denzin, 1984; Lazarus, 1991; Lazarus and Folkman, 1984; Meyer and Turner,

2007; Op 'T Eynde *et al.*, 2007). Particular emotional experiences involve person–environmental transactions. Consequently, in most cases there are both a social dimension of an emotional experience, and the person's enactment of the particular emotional way of being.

Emotional experiences are also influenced by the particular social–historical context in which the transaction occurred (DeCuir-Gunby and Williams, 2007; Markus and Kitayama, 1994; Ratner, 2007; Schutz *et al.*, 2007; Stearns and Stearns, 1985). For example, the emotional experience we label guilt is based upon developing knowledge of the ethical and legal values of a culture (Ratner, 2007; Weiner, 2007). As such, the student or teacher must adopt the cultural value or belief of personal responsibility in order for a guilt emotional experience. This suggests that the appraisals and attributions that students and teachers make are reflective of the social–historical context in which they and their social groups are embedded.

As such, when there are emotional experiences in the classroom, they reflect person–environment transactions as well as the social–historical contexts in which those transactions occur. Illustrative of this concept is an emotional school situation described in a study by Decuir-Gunby and Williams (2007). After attending an assembly featuring a local civil rights leader, some students had intensive emotional experiences, including guilt, anger, and sadness. One student, in particular, described her classmate as being "upset, and crying. She was upset that he was saying she was a bad person simply because she was white". This student was experiencing an emotion (sadness) as a result of both an environmental transaction (listening to the civil rights leader's speech) and her own social-historical context (the perceived meaning of being white).

Educational Research on Students' Emotional Experiences

Researchers' efforts to study students' emotional experiences can be broadly organized into two general areas – students' self-regulation and motivation and the related area of students' learning and achievement.

Students' Self-Regulation, Motivation, and Emotional Experiences

In the motivation and self-regulation literature, students' emotional experiences emerge during activities that are embedded within personal as well as social-historical contexts. This personal history includes students' goals, values, and beliefs regarding academics in general as well as their beliefs about the subject and the particular activity (Op 'T Eynde *et al.*, 2007; Schutz *et al.*, 2006).

For example, a student may possess a general affective tendency to avoid a challenging task for fear that it may

show ignorance relative to his/her peers (i.e., performance avoidance goal orientation) (Elliot and Pekrun, 2007; Linnenbrink, 2007). In this situation, the student may begin an activity fearful and anxious and, as a result, may attend more closely to aspects of the activity that may be interpreted as a lack of understanding. Thus, through fear and anxiety the student may look to the teacher for help (i.e., external regulation) (Linnenbrink, 2007; Pekrun *et al.*, 2004).

Researchers have also found that pleasant emotional experiences tend to be associated with perceived self-regulation, intrinsic motivation, and the tendency to engage in meta-cognitive or self-regulatory strategies (Linnenbrink, 2007; Meyer and Turner, 2007; Pekrun *et al.*, 2002). This suggests that emotional experiences (pleasant or unpleasant) tend to provide multidirectional feedback for other processes involved in self-regulation (Turner and Waugh, 2007). For example, having successful experiences that students attribute to themselves may result in pleasant emotions, which can increase interest and focus on the activity (Ainley, 2007; Efklides and Petkaki, 2005). This link between emotional experience and self-regulatory processes was demonstrated by Boekaerts (2007), who found that pleasant affect was associated with increases in competence and value judgments as well as effort, whereas unpleasant affect lowered competence and value judgments and was associated with less effort.

The influence of emotional experiences on self-regulation and other motivational and learning processes has resulted in researchers investigating the process involved in emotional regulation. Emotional regulation involves various processes that are directed at monitoring, evaluating, and modifying emotional experiences (Schutz and Davis, 2000; Schutz and DeCuir, 2002; Thompson, 1994). In the area of testing, Schutz *et al.* (2004) were able to explain 55% of the variance in the Worry subscale of the Revised Test Anxiety scale (Benson, 1998) with the emotional regulation during test-taking scale (ERT). In a follow-up study Schutz *et al.* (2007) accounted for 56% of the variance in pleasant and 87% of unpleasant test emotions. These results suggest what students do during tests or other classroom activities may influence their emotional experience.

Students' Learning, Achievement, and Emotional Experiences

Interest in relationships among learning, achievement, and emotional experiences has a long history. The focus of much of this research has been on the test anxiety construct. Test anxiety has been associated with a number of adverse effects on students: poor cognitive performance, scholastic underachievement, psychological distress, and ill health (Zeidner, 2007). Zeidner (2007) goes as far as to suggest that:

Indeed, a student's performance on a classroom exam may be as much an indicator of the students' ability to cope with high levels of evaluative stress and anxiety in the classroom as a reflection of the ability or achievement the exam aims at measuring. Thus, the measurement of any particular ability or proficiency will be confounded with anxiety. (Zeidner 2007: 160)

Recently, researchers interested in emotions in education have also begun to examine other emotional experiences. They paint an interesting, yet complex, picture of the role of emotional experiences in the classroom. As expected, in general, pleasant emotional experiences tend to be associated with the use of more effective learning strategies, task-focused attention, and academic performance (Pekrun *et al.*, 2002, 2004), whereas unpleasant emotional experiences, such as anxiety, boredom, and hopelessness tend to reduce academic performance (Pekrun *et al.*, 2002; Zeidner, 2007). However, other research suggests that unpleasant emotional experiences can also improve achievement. In one such study, Pekrun and Hofmann (1996) found that for some students anxiety was not related to improvement in achievement-related agency over time but for others, there was a positive relationship.

Others have obtained similarly inconsistent findings. Linnenbrink (2007) indicated that general measures of pleasant affect tended to be consistently unrelated to students' learning. This suggests that emotional experiences do not occur in a personal vacuum. As indicated, emotional experiences emerge out of the appraisals students make regarding where they perceive themselves to be in relationship to their goals, values, and beliefs. As a result, what is key to the nature of a particular emotional experience, as well as the potential learning and self-regulation during and after an activity, are the students' perceptions of control and efficacy as well as the attributions they make during and after the activity (Pekrun *et al.*, 2007; Weiner, 2007).

Thus, emotional experiences occur in real time and therefore, are susceptible to changes that occur during an event (Turner and Waugh, 2007). As such, an emotional experience can change very quickly (e.g., joy can rapidly become frustration or anger), which may explain some of the inconsistent findings reported. This also reinforces the need for researchers to continue looking at emotional experiences as they are occurring (Ainley, 2007; Meyer and Turner, 2007; Op 'T Eynde *et al.*, 2007; Turner and Waugh, 2007).

Educational Research on Teachers' Emotional Experiences

Researchers who foreground teacher emotions in educational contexts have tended to focus on issues related to teachers' efforts to cope with unpleasant, difficult

emotional experiences, and the related topic of emotional rules and labor.

Unpleasant Emotional Experiences

Researchers suggest that emotions tend to be pervasive within the service of teaching (Meyer and Turner, 2007; Williams *et al.*, in press). Meyer and Turner (2007), demonstrated that teachers who care tend to be sensitive and use humor to create classrooms where students are less likely to avoid tasks and increase performance. However, similar to most professions that require a positive work relationship with the public, teachers must juggle their own emotions, while trying to contend with their students' needs and attend to other administrative duties. As such, teaching is an emotionally charged situation and, if not regulated appropriately, may lead to anxiety, depression, anger, or simply becoming burned out on teaching.

Liljestrom *et al.* (2007) reported that some teachers become angry when required to carry out additional administrative duties that interfere with their curriculum and teaching, although the subsequent behavioral reactions varied across individuals. For instance, some teachers will rebel by becoming less cooperative with administrators, while some advocated for policy changes to higher-level administrators. Still others choose to leave the profession entirely.

The prevalence of unpleasant emotions was demonstrated by Sutton (2007) who, in a diary of teachers' anger and frustration, found that each week teachers reported a median of two anger experiences and seven emotional experiences labeled as frustration. Even more illustrative of the nature of teaching was that many of the teachers reported that these were experiences that sometimes lasted for more than an hour (Sutton, 2007). Reports such as these have resulted in researchers focusing on emotional labor and the emotional rules associated with teaching.

Emotional Rules and Labor

While researchers agree that some emotions are universal, it is important to keep in mind that emotions are socially constructed and therefore behavioral, emotional, and physiological reactions tend to fluctuate across cultures. To understand these social-historical influences, researchers have suggested that there are normative emotional rules that indicate what emotional displays are or are not appropriate (Hargreaves, 2001; Liljestrom *et al.*, 2007; Morris and Feldman, 1996; Zembylas, 2007). Thus, when examining normative rules for teachers, it is important to keep in mind that institutions such as schools embody norms that have been established historically and culturally. Because of the normative nature of these rules, teachers often feel they must conform to socially acceptable standards of displaying emotions or be perceived as deviant. This can be illustrated

by comparing a teacher who teaches to the test and shows neutrality of emotions to a teacher that embodies pedagogical practices that engage students in authentic learning. Depending on the particular school context, each of these teachers could be considered deviant.

Normative rules and consequences related to emotions are not only affected by environmental factors, but also reinforce a reciprocal relationship. Continuing with the above example, a teacher who deviates from the institutionally constructed norm of emotional neutrality and teaching to a standardized test, may be emotionally affected by feeling shame and doubt about how they are teaching. Williams *et al.* (2008) found evidence of this when they found that many teachers deem it necessary to suppress or avoid the display of emotions in the classroom. As such, teachers' emotional experiences are tied to construction of their own teachers' identities (Schutz *et al.*, 2007). The dynamic and transactional nature of emotional experience is influenced by current teachers' identities; this may restrict their affective displays based on how they want to be seen, they will tend not to exhibit emotions that contradict this image.

The idea that teachers are expected to display different emotions in particular ways has been associated with the idea of emotional labor (Hargreaves, 2001; Hochschild, 1990; Morris and Feldman, 1996; Zembylas, 2007). Morris and Feldman (1996) define emotional labor "as the effort, planning, and control needed to express organizationally desired emotions during interpersonal transactions" (p. 987). Emotional labor, under some circumstances, has been associated with emotional exhaustion (a key component of burnout), job satisfaction, and adverse health symptoms (Hochschild, 1990; Morris and Feldman, 1996) thereby demonstrating again the importance of understanding the nature of emotional experiences in the classroom.

Where Do We Go from Here?

As indicated, we currently view emotional experiences as transactional processes that occur in real time. In addition, these transactional processes are embedded within particular, ever-changing social-historical contexts. Given this perspective, it would seem important to approach the study of emotions in education using multiple methods and methodologies (Pekrun and Schutz, 2007) at the various levels of research (Schutz *et al.*, 2004).

One crucial problem area in need of exploration is how issues of class, race, and ethnicity, and gender transact with emotional experiences within the educational setting. In many societies, such as the United States, issues such as race and gender often impact the learning and development that occurs within the school context (DeCuir-Gunby and Williams, 2007; Liljestrom *et al.*, 2007; Steele, 1997). Further exploration of these issues

may help demonstrate the impact class, race, and ethnicity, and gender prejudices have in the educational setting, as well as provide an avenue for researchers and educators to help address these issues.

A second area in need of attention is the area of emotional development. Psychologists have researched the nature of emotional development (Aviles *et al.*, 2006); however, developing an understanding of how unpleasant and complex emotional experiences develop within the school context will require more contextual and domain specific approaches.

A related topic is the development of ways for teachers to scaffold emotions in the classrooms (Meyer and Turner, 2007). It seems clear that by scaffolding and encouraging students' emotions in class, a teacher can help to forge a trusting bond with the student, demonstrate and model respect for the student, and facilitate better engagement with learning tasks. Therefore, more research and eventually implementation research is needed in this area.

Another area involves the emotional labor associated with teaching. Emotional labor has been associated with job satisfaction, adverse health symptoms, and emotional exhaustion – key components of burnout and teacher attrition (Schutz *et al.*, 2007; Zembylas, 2007). A better understanding of the nature of emotional labor and the emotional display rules for teachers will be important to facilitate teachers' emotional well being.

The final area related to teaching is the area of skills at reading emotions of others or other directedness (Nowicki and Carton, 1993; Snow *et al.*, 1996). As mentioned earlier, for the most part, goals and our self-directed attempts at accomplishing them are predominantly social endeavors. They emerge from transactions in a social environment and we pursue them within our social-historical context. The expression of emotions and our ability to read others' emotions are key components of the self-regulation process. For example, the ability of a teacher to tell when students are anxious or frustrated about a task or not understanding the questions, may be the first step in helping students to learn how to regulate those emotions. This is an area where there has been very little inquiry but which has tremendous potential to help the educational process.

Conclusions

Emotions are an integral part of the educational activity setting and, therefore, an understanding of the nature of emotions in the school context is an important goal. In this article, we have attempted to examine some current research on emotional experiences in education. As this area matures, we see the continual examination of the theoretical foundations of emotions in education as fundamental to healthy development of our program of inquiry as well as for that of the larger community.

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Cognition and Emotion

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Introduction

What is the causal impact of emotion on cognition, and of cognition on emotion? Although this question is as classical as the one about, for example, the relation between nature and nurture, or consciousness and unconsciousness, it is not possible at this time to find a mapping of its possible answers within the fields of educational and psychological sciences. The investigation of the causal relation between cognition and emotion within these fields can be characterized as a disparate archipelago of research islands each somewhat isolated from the others and often covered or surrounded by an almost impenetrable fog. This article presents a representative map of this territory.

Why is it important to address the nature of the causal relation between cognition and emotion? The reasons are multiple. First, this question is interesting as a fundamental concern of human psychology that has attracted relatively little empirical attention. Of more than 200 000 psychological and educational publications (articles, book chapters, and books) including in their title the terms cognition or emotion (or equivalent terms such as intelligence, intellect, reasoning, mood, feeling, or affect), less than 4% include both terms (source PsycINFO and ERIC, May 2009). Moreover, of this 4%, almost all investigate cognition and emotion as the cause or the effect of a third phenomenon (e.g., the impact of gender on cognition and emotion or the impact of cognition and emotion on music). Few studies address the causal relation between cognition and emotion and, when they do, it is typically in one direction. Second, a better understanding of the causal relation between cognition and emotion could improve our understanding of both phenomena via the analyses of a sometimes underestimated dimension of their nature; that is, the emotional nature of cognition and the cognitive nature of emotion. Third, within pragmatic or applied contexts, such as educational settings, these two phenomena are currently assessed independently; for instance, educational attainment and behavioral/emotional problems are known to be linked but are treated as separate domains. Improved understanding of the relation between children's cognitive and emotional development should contribute to the elaboration of integrated methods for assessment and treatment or intervention; not just for atypical children, for all those within an educational setting. Last but not least, most cognition and emotion researchers and professionals within

psychology and education recognize that cognition and emotion are in some sort of relation. Yet, most of the time, such individuals are quite ignorant of each other's expertise or hold false beliefs about one another even when they work in the same institution. For these four reasons, among others, the simultaneous consideration of cognition and emotion, and the nature of their relation, has much to offer.

Why does the nature of the relation between cognition and emotion still remain so open today? There are at least two reasons: the oldness of the schism between these two domains of psychological and educational enquiry, and the relative youth of affective sciences (i.e., the scientific study of emotions, moods, and feelings, and their constitutive elements). Indeed, the failure to provide integrated accounts of cognition and emotion as psychological phenomena has its roots in the history of philosophy, within which there is a classical distinction between reason and the passions, reason having been given pride of place in philosophical enquiry. Solomon explains the persistent failure to integrate these two domains as a function of the inferior role accorded to emotion, beginning with Plato, and the fact that emotion and cognition have been treated as though they are different kinds, thereby excluding the necessity of simultaneous consideration (Solomon (2000) in Lewis and Haviland-Jones (2000)). Pascal (1670/1998) eloquently captured this latter distinction when he said, "The heart has its reasons that the reason does not know."

Contemporary cognitive science continues to be dominated by a preoccupation with cognition as a cold phenomenon. Predominantly, emotion is not considered or it is viewed as a confounding variable. When emotional and cognitive phenomena are considered together, emotion is often treated as a heating process, not directly integrated with cognition but causing spikes in temperature that interfere with cognitive processes.

The cognition–emotion dualism is to a great extent perpetuated methodologically within contemporary psychological and educational sciences. Indeed, in experimental sciences, you cannot study everything at the same time; it is very difficult to be simultaneously deep and broad. The fine-grained questions of experimental sciences need focused methods and are, in many cases, deeply connected to certain procedures such as reaction time or failure–success paradigms. By contrast, the study of emotion has relied to a great extent on subjective self-report at

one end of a spectrum, and expressive behaviors (e.g., facial expressions) or physiological measures (e.g., blood volume pulse) at the other end of the spectrum. Such methodological disparities are lessening as a function of the rapid growth in neuroscientific methods (e.g., functional magnetic resonance imaging (fMRI), positron emission tomography (PET), second-generation electroencephalography (EEG)) but it remains unclear when we will be able to identify and assess both cognitive and emotional functions unfolding in real time: this is a goal for the future. In the meantime, cognitive scientists and emotion researchers very often talk a different talk and walk a different walk.

As indicated earlier, the affective sciences are still relatively young. It is also notable that they have to some extent define themselves against a backdrop of cognitivism – just as the cognitive scientists once defined themselves against behaviorism. Whereas the demise of behaviorism opened the way to studying cognitive processes within the black box, the affective revolution no longer considers persons merely as cognitive processors, more or less similar to Turing machines, and has allowed scientists to ask what was happening in the heart of people: emotion has become an object of scientific enquiry to be described, explained, predicted, and even transformed. At one end of the methodological spectrum, private, conscious experiences such as feelings and moods and their self-report via introspection are again considered as legitimate scientific objects and methods. At the other end of the spectrum, neuroscientific methods raise the possibility that scientists will find some of the physical correlates of peoples' subjective experiences, thus reinforcing their status as a legitimate object of scientific enquiry. Such methods may also undermine the dominant dualistic attitude in psychological and educational sciences regarding the mind–body relationship: they open a space where the study of emotion can take place (as the missing link) between the mind and the body.

The rest of the article is divided into four sections. We start with a short discussion about the meaning of emotion and cognition. Then we discuss the straightforward conceptions of the causal relationship between cognition and emotion: cognition as a cause of emotion, and emotion as a cause of cognition. In the conclusion, we speculate about the circular causal relationship between cognition and emotion and about some promising future research and intervention programs.

The Problem of Definition

Problems surrounding the meaning of cognition and emotion are at least as old as psychological and educational sciences. The question of how to define these terms is sometimes construed as a false problem with no existence, a real problem with no solution, or a problem with as many solutions as people trying to resolve it! It is not the

function of the article to offer a definitive definition for each term but, rather, to consider how the two constructs have been related to one another. Nevertheless, it is important to set out the scope of these terms as they are used in the psychological and educational sciences. Indeed, many misunderstandings and conflicts centered on the relation between cognition and emotion are related to the absence of a common understanding of the phenomena in question and to the overgeneralization of some quite specific definitions.

Here, cognition refers to the different forms of knowledge (e.g., belief, thought, etc.) that we have and, critically, to the mental functions (e.g., systems, schemas, processes, etc.) making the acquisition, storage, retrieval, transformation, and use of this knowledge possible, for example, memory, attention, intelligence, language, mental imagery, and so on. This knowledge can be empirically or logically true or false, real or unreal, and more or less certain. It can be more or less simple or complex, sensory or symbolic, temporary or permanent, general or specific, conscious or unconscious, controllable or uncontrollable, and universal or idiosyncratic. Importantly, it is traditionally held that knowledge is (usually implicitly) rule bound or structured and that the mental functions operate in accordance with such rules; for example, knowledge of language implies some form of syntax (that is consciously inaccessible to language users without formal education). Finally, such knowledge and mental functions are considered as interrelated states and processes of the mind (e.g., subjective experience of the color red), the body (e.g., neuronal correlates associate with the perception of the color red), and the culture (e.g., words to represent the color red: red, *rođ*, *roja*, *rouge*, etc.).

Emotion, on the other hand, is a class of feelings directed to objects, where objects include persons, things, and situations, both real and imagined. Emotions can be pleasant or unpleasant and more or less intense or moderate, but they can be differentiated from sensations and states of bodily arousal because of their inherent aboutness (i.e., intentionality) and their close connection with actions (Kenny, 1963). Emotions can be more or less basic (e.g., happiness, anger, fear, sadness, disgust, or surprise) or complex (e.g., guilt, shame, pride, jealousy, and mixed emotions), sensory or symbolic/abstract, temporary (e.g., sadness about a specific event) or enduring (e.g., an ongoing depressive mood), conscious or unconscious, controlled or uncontrolled, general or specific, and universal (e.g., fear of death) or idiosyncratic (Spanish *Duende*, Portuguese *Saodade*, etc.). Not all these aspects of emotion are uncontested, of course, but they fall under the common sense notion of emotion and the emotional lives of persons. Emotions are generally thought to be organized in that they are discrete (particularly in childhood) and they have their own natural history: certain situations and thoughts, as well as expressions and states of the body, are universally constitutive of

specific emotions presumably because of our evolutionary origins (Darwin, 1872/1899; Ekman, 1999 in Dalgleish and Power, 1999; Lazarus, 1991). Finally, emotions are interrelated states and processes of the mind (e.g., subjective experience of happiness about or of something), of the body (heart rate changes, respiration rate, muscle tension, pupil dilatation, etc.), and of the culture (e.g., the social and cultural norms related to the feeling of anger).

In the foregoing discussion, we have provided a sketch of emotion that is clearly cognitive in some sense: That is, the inherent aboutness of emotion entails that an emotion has cognitive content. For example, we are scared of the ferocious dog or happy about recent political events. The object of an emotion (e.g., the ferocious dog) and the beliefs on which an emotion is founded (e.g., that ferocious dogs may do us an injury) have a conceptual rather than a causal relation to the emotion (see Solomon, 2000 in Lewis and Haviland-Jones (2000) for a discussion). In the following sections, however, we take as a starting point the historical assumption that emotion and cognition may be treated as separable phenomena that may stand in a cause or effect relations to one another – an assumption that may ultimately unravel.

Before we embark on this discussion, however, consider some research that suggests that emotional responses can occur before there is time for any cognitive processing (even unconscious). For example, LeDoux (1996) demonstrated that some emotional answers, taking place within a few milliseconds (e.g., fear of already known stimuli) result from an immediate mid- and lower-brain (i.e., the amygdala and the thalamus) response to a stimulus and can be produced without the involvement of the cortex, where cognitive processes are assumed to take place. It should be noted, however, that LeDoux also showed that learning a new emotional reaction to a stimulus involves the (sensory) cortex and therefore, it is reasoned, some cognitive processing, until this emotional reaction is completely automatic. Interestingly, to the best of our knowledge, no experimental study has tried to demonstrate that cognitive answers can be produced without being linked to emotion (e.g., without the emotional areas of the brain being involved), though this seems entirely plausible.

Cognition as a Cause of Emotion

Until 30 years ago, explanations of emotional phenomena had been preoccupied mainly with the body. Two hypotheses were then in competition: the James-Lange and the Cannon. In a nutshell, the former postulated that emotions resulted from subjective perceptions of bodily states (e.g., we are sad because we cry) and the latter postulated almost the opposite (e.g., we cry because we are sad). The debate about the relation between the subjective experiences of emotions and their body correlates is still very much alive

(e.g., Cacioppo *et al.*, (2000) in Lewis and Haviland-Jones, 2000; Damasio, 1994; Ekman and Rosenberg, 2005).

With the affective revolution, however, attention shifted to the role of cognition – specifically, the role of cognitive appraisal or evaluation. Schachter and Singer (1962) were among the first to give an empirical demonstration of the existence of this kind of appraisal. They injected people with adrenaline. One group was told that the injection would have an impact on their heart beat (which was true) while a second that it would have no impact (which was untrue). Although, the two groups had the same bodily experience (increase of heart beat), only the second group of people reported feeling emotions. Moreover, when the second group was exposed to a happy person, they reported happiness, and anger when exposed to an angry person (these emotions were feigned by actors present in the room with the subject).

The cognitive-appraisal hypothesis has been the object of active debate (see Lazarus, 1982, 1984 in Lazarus, 1991; Zajonc, 1980 in Zajonc, 1984) and criticism (see Reisenzein (1983) for a review): is cognition (whether conscious or not) a necessary (albeit nonsufficient) condition of emotion? Nevertheless, the basic premise that cognitive appraisal often has an influence (both as an antecedent and as a modulator) on emotional experience (whether that be the valence of the emotion experienced or the level of emotional arousal) found numerous empirical supports (e.g., Frijda, 1986; Roseman, 1984; Scherer, 1984; Smith, 1989), and underpins those cognitive-psychotherapy theories that aim to alter the cognitive-appraisal process in emotional disorders (e.g., Beck, 1976). Several dimensions of the cognitive appraisal of stimuli have been identified: novelty/familiarity, valence, goal/need significance, coping potential, and compatibility with personal and cultural norms (e.g., Kappas (2006) and Scherer *et al.*, (2001) for reviews). For example, a stimulus that is appraised as pleasant (valence) and acceptable (according to personal and cultural norms) could result in feeling happiness.

While there are many variants of cognitive appraisal, they are unified in stressing a very tight and, in most cases, subjectively instantaneous connection between an experienced emotion and the beliefs or thoughts that accompany it. There is, however, another sense in which our emotional experience is affected by our understanding of circumstances: in addition to knowing things about the situations in which we feel emotions, we also have knowledge of emotions (of their nature, causes, consequences, and possibilities of regulation) which has a tremendous potential to impact on our emotional experience by changing the nature of the relation we have to the emotion eliciting circumstances or the emotion itself (e.g., see for reviews, de Rosnay *et al.*, 2008; Haga *et al.*, 2008; Harris, 2006; Pons *et al.*, 2005). For example, between 4 and 5 years of age, children begin to understand the effect of memories on emotions. They realize that the intensity of anger decreases over

time; looking at a picture of a lost loved one can reignite sadness; or thinking about a positive past event can cause joy. Development brings further emotion insights. From about 8 years of age, even sooner under certain conditions, children begin to understand how feelings can be regulated via the use of cognitive strategies such as the cognitive re-evaluation of the situation (e.g., "that's not the end of the world") and the re-orientation of attention (e.g., "let's think about something positive"); thus children demonstrate conscious knowledge of the influence of thought process (cognition) on emotions. Consider as an example the well-documented association between depression and the understanding of the strategies to regulate feelings: children and adolescents who think that the use of strategies such as rumination and passivity are better to deal with negative emotions than strategies such as reevaluation of the situation or re-focusing show more depressive symptoms.

Furthermore, there is accumulating evidence that children's knowledge about emotions has an impact on their emotional experiences and well-being in a social context. This impact has been identified in both preschool and school children (see Pons *et al.*, 2005 for a review). For example, young children who better understand situation-emotion regularities (e.g., feeling happy when receiving a gift or sad when breaking a toy) are also the most popular with their day-care friends. At 5 years of age, children who are better able to recognize basic emotions are also the most popular with their classmates 1 or 2 years later. The relationship between emotion understanding and social functioning is also seen in middle childhood: 9-year-old children (particularly girls) with a good understanding of negative emotion-regulation strategies are considered, by their classmates and teachers, to be the most socially competent.

Surprisingly, there is relatively little research on the impact of school achievement on emotion. Some studies reveal a complex pattern of relations between positive and negative emotions, and school performance and self-evaluation of academic competencies. The link seems to be stronger between emotions and self-evaluation of academic competencies than between emotions and actual school performances (Gumora and Arsenio, 2002).

Emotion as a Cause of Cognition

It is widely held, in some form or another, that our emotions put us in some kind of meaningful relation to the world: A big ferocious dog is not just a fast-moving, big-toothed, furry creature; it is something to be feared because it is a potential threat to our well-being. How, then, does this meaningful relation between the person experiencing the emotion and the world influence our cognition? The answer to this question, within psychological and educational

sciences, is twofold: emotional arousal is considered to be motivational, and emotional valence is considered to be a compass that guides our cognition.

At a general level, emotional arousal has an impact on cognition because it mobilizes the mind, as well as the body and the culture, to act and react (e.g., fear prepares the mind, the body, and the culture for fight or flight). This motivational function is the only one recognized by Piaget (1954/1981). He acknowledged that the intellect needs emotional arousal, which can speed up or slow down the functioning of the intellect and therefore its development. In 1908, Yerkes and Dodson postulated that an appropriate level of emotional arousal is needed to achieve an optimal level of cognitive performance. Too much anxiety (high arousal) or not enough interest (low arousal) might have a negative impact on the cognitive functions. They also postulated a functional relation between emotional arousal and task demands: the more difficult the task, the lower the level of emotional arousal required to reach the optimum level of cognitive performance.

Emotion not only makes cognition move but also orients its movement. Emotional arousal provides energy, whereas emotional valence gives the direction for cognition to move and therefore to develop. This is well illustrated by the behaviorist research tradition. Most classical and operant conditioning would not be possible without emotional valence: Emotional reactions (more or less positive or negative) to a stimulus (more or less conditioned or unconditioned) very often determine the behavioral response to it such as the appearance, disappearance, prioritization, and transformation of the (cognitive) behavior. This compass function of emotional valence for cognition is also recognized by Freud (1905/2002). The expressed or repressed drive coming from the Id not only gives its energy to the cognitive self but also orients (e.g., activation and inhibition) its functioning and development (in collaboration with the cognitive super-ego).

Numerous experimental studies have demonstrated the impact of emotional arousal and valence on cognition (e.g., memory, attention, and creativity). For example, when shown a list of positive and negative words, most people recall more positive words. If these people are clinically depressed, however, then they will tend to recall more negative words especially when these words have a clear negative valence (death, cancer, war, etc.). In a similar vein, typical people recall more elements of a story when the emotional valence of the story matches their own current mood, especially when the story is sad and they are in a sad mood while reading the story. It should be noted that when typical people are in a neutral mood, they remember more positive than negative elements of the story (e.g., Matt *et al.* (1992) for a review). It is as if, by default, when we are feeling nothing or at least at peace, our memory has an emotionally positive orientation, which may be adaptive. Other studies have also shown

that the recall of information is facilitated when the mood of the person is the same at encoding and recall, irrespective of the emotional valence of this information. This effect is stronger when the information is autobiographical. For example, the recall of a list of neutral words is facilitated if the person is in a sad mood both when trying to learn (encoding) and to recall this list (see Eich and Forgas, (2003) for a review). Such findings may help to explain why the recall of a traumatic autobiographical event is facilitated when people are already in a negative mood – a vicious cycle recognized by many schools of psychotherapy (Beck, 1976).

Emotional arousal and valence also have a direct impact on attentional processes (Eysenck *et al.* (2007); MacLeod (2005) for reviews). People with mood disorders pay more attention to information (words, pictures, faces, etc.) with an emotional valence matching their mood. For example, depressed people have the tendency to pay more attention to their personal characteristics (internal locus of control) when explaining their failures (e.g., because who I am, what I did, or what I said) and they pay more attention to their environment (external locus of control) to explain their success (e.g., because of luck, fate, or external events). In stark contrast to typical people, those who are clinically anxious (phobia, posttraumatic stress disorder (PTSD), etc.) direct their attention more toward threatening words (cancer, evil, death, etc.) than neutral words (house, picture, chair, etc.). When confronted with homonym words (e.g., batter-pancake vs. batter-assault), non-anxious people have the tendency to activate the neutral meaning of the word, whereas anxious people have the tendency to activate the negative meaning.

A person's level of emotional arousal and the valence of their emotional experience may also play an important role when constructing new information. Projective tests such as the Thematic Apperception Test (TAT) and the Rorschach are partially built on this assumption. It is argued, for example, that people's emotions determine, via a process of projective identification, their interpretation of reality, especially when this reality is ambiguous (ambiguous inkblots could be interpreted as a loving mother, a threatening father, a lost child, an unfaithful partner, etc.). Attachment theory (Bowlby, 1969/1997) presents us with an interesting illustration of this phenomenon. It is widely held that distinctive patterns of emotion co-regulation in infancy, so-called attachment styles (i.e., secure, ambivalent, avoidant, and disorganized), continue to inform the child's understanding of relationships much later on via enduring cognitive representations of such relationships (i.e., internal working models). Thus, if presented with a quasi-ambiguous picture of a mother and father leaving a child as they go on holiday for 2 weeks, children's understanding and construal of the events depicted are to a great extent determined by their emotional attachment style in infancy.

Of course, emotions may have an impact on other aspects of memory, attention, and creativity (e.g., research on flashbulb memories and autobiographical memory) and more generally on cognition (e.g., intelligence, language, perception, and moral reasoning). It should also be noted that most studies of the impact of emotion on cognition were conducted with adults (e.g., Brennen *et al.*, 2007; Overskeid, 2000). However, findings with children seem to confirm those obtained with adults.

Indeed, a substantial number of studies have shown that emotions such as anxiety (but also joy, pride, shame, and fear) have an impact on several aspects of learning at school: achievement, motivation, interest, goals, metacognition, etc. These studies showed that this impact may differ from one academic domain to another (i.e., mother tongue, mathematics, arts, etc.) and from one pupil to another (i.e., individual differences due to gender) (see Lafontaine and Pons 2005 in Pons *et al.* (2005); and Schutz and Pekrun, (2007) for reviews). For example, induced positive mood in children (e.g., a compliment about clothes) improves their performance in a block-design task, which is a classical measure of intelligence. Anxiety can prevent pupils from exercising all of their capacities and can, in some cases, prevent them from doing any mathematical reasoning altogether. Anxiety also influences the functioning of metacognition. Certain students feel that when mathematical explanations are given, a veil, even a wall, suddenly appears in front of them, stopping them from reaching the concentration level necessary for understanding what they are being shown. They are thus prevented from engaging in the metacognitive processes necessary to solve the problems. More generally, these studies showed that pupils' emotional competences (i.e., their capacity to experience, recognize, express, control the expression of, regulate the experience of, and understand emotions) have an impact on their school achievement.

Until quite recently, most of the studies on the impact of emotions at school had been almost exclusively focusing on pupils. Lately, a new line of research has emerged which suggests some interesting relations. Positive emotions experienced by teachers are related to the level of support from parents and colleagues, and to pupils' cooperative behaviors and learning achievement. Teachers' negative emotions (e.g., anger, frustration, or sadness) stem from the absence of support from colleagues and parents, and are related to pupils' disruptive behaviors. Teachers' emotions also vary according to their professional experience and the academic level of their teaching: Novice teachers report more anxiety than experienced teachers and primary school teachers report more sadness and helplessness than secondary school teachers (often related to their pupils' life difficulties). In sum, the emotional constellation of the teacher may significantly influence the educational environment of the classroom.

Conclusion

The aforementioned studies demonstrate how cognition and emotion can work together. Cognition and emotion may be thought of as two different languages, to represent and communicate about the world (ourselves, others, the physical world, etc.) that coexist within all typical individuals: Every person is emotionally and cognitively bilingual.

While illustrating impressive relations between cognition and emotion, many of the aforementioned studies actually make it difficult to know which is causally antecedent. The allocation of cause, in many cases, may depend on the moment you are taking the snapshot in the flow of the person's subjective experience (e.g., "I am anxious, which makes me focus my attention on anxious information, which in return reinforces my anxiety, which in turn makes me focus on anxious information, etc.").

We may also speculate on the fact that, as a function of the situation (context, circumstances, etc.) and the individual (personality, level of development, etc.), either cognition or emotion may be dominating the individual's mental functioning and, further, that the absence of this circularity would be dysfunctional for the individual.

Until quite recently, pedagogy had focused its attention almost exclusively on the cognitive dimension of the mind, for pupils and teachers. There are at least two challenges for researchers and professionals in education and psychology. The first is the development of reliable and valid, but also realistic and interdisciplinary, methodologies to improve emotional competences within school settings. This applies to children and adolescents in relation to their school achievement, and also to teachers in relation to their teaching skills. Today, few if any of these methodologies have been properly developed, let alone evaluated for their reliability and validity. There is a need for interventions that make a discernable impact on pupils' and teachers' emotional competences and bring about stable long-term positive changes in pupils' school achievement and teachers' pedagogical competences. The second challenge is to introduce emotional competences (i.e., the abilities to experience, recognize, express, control the expression of, regulate the experience of, and understand emotions) in the standard curriculum of preschool and compulsory school, and in the training programs of the teachers. This implies strong political decision. Indeed, the introduction of emotion pedagogy at school is still often seen as irrelevant when there are no existing problems – the object and goal of the school institution being still often considered as cognitive and instructive rather than emotional and educative. This change in thinking about the importance of emotions at school also implies a reorganization of pupils' and teachers' curriculum, teachers already having much to teach and learn. Such reorganization can be quite problematic

not only because it is a source of change (and that can cause some resistance) but also because it implies that some topics which are currently taught have to be reduced within the curriculum and may be even eliminated.

Summary

Three main results can be abstracted from the educational and psychological studies discussed in this article:

1. Some (old) emotional reactions can be elicited without the intervention of cognition (via a direct biological appraisal of the stimulus and without the involvement of the cortex). Surprisingly, the opposite (i.e., cognition without emotion) has not yet been so well documented; this absence perhaps being due to the fact this documentation is too trivial (or impossible). Some researchers have been tempted by an overgeneralization of these no-causal findings. However, the fact that cognition and emotion are sometimes not causing one another (or that they are not the only cause of one another) does not imply that they are never causing one another.
2. Indeed, numerous studies have demonstrated that many emotional reactions and modulations are caused by the individual's cognitive appraisal of the stimuli coming from his/her body, mind, and environment. They have also demonstrated a robust relationship between children's cognitive understanding of emotions (including the possibility to regulate emotions) and their social and emotional well-being.
3. Numerous studies have equally demonstrated that emotional arousal and/or valence have an impact on memory (encoding, storage, and retrieval of existing information), attention (activation and inhibition of existing information), and creativity (elaboration of new information). They have also shown that the impact of emotional arousal on cognition is not linear and that the impact of positive and negative emotional valences is not symmetrical. Emotional arousal has to be neither too low nor too high to have an optimum impact on cognition (i.e., not an additional burden for cognitive executive functions) and the impact of negative emotions on cognition seems clearer than the impact of positive emotions.

While illustrating impressive relations between cognition and emotion, many of the studies discussed in this article actually make it difficult to know which is causally antecedent. The allocation of cause, in many cases, may depend on the moment you are taking the snapshot in the flow of the person's subjective experience (e.g., "I am depressed, which makes me focus my attention on depressive information, which in return reinforces my depression, which in turn makes me focus on depression information"). We may also

speculate on the fact that, as a function of the situation (context, circumstances, etc.) and the individual (personality, level of development, etc.), either cognition or emotion may be dominating the individual's mental functioning and, further, that the absence of this circularity would be dysfunctional for the individual.

Finally, although most of the studies reported here have been conducted in laboratories, an increasing number of studies seems to confirm, with some nuances, the mutual impact of cognition and emotion on pupils and teachers. In the future, it would be interesting to further investigate this mutual impact of cognition and emotion at school. Such investigations could have a positive influence on pupils' school achievement and on the quality of teachers' teaching. It would also test the validity of our understanding of the relation between cognition and emotion. Indeed, one thing is to demonstrate the logical coherence and the empirical correspondence of our understanding; another is to demonstrate that our understanding can change pragmatically the world of practice for the best.

See also: Affect, Mood and Emotions; Anxiety; Coping with Stressful Situations: An Important Aspect of Self-Regulation; Educating Students with Emotional and Behavioral Disorders; Emotion in Educational Contexts; Empathy; Interest; Social and Emotional Outcomes of Learning; Volitional Control of Learning; Wellbeing.

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Poverty, Effects of on Social and Emotional Development

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Glossary

Absolute poverty measure – In the United States, it is a threshold determined by a number generated in 1960 that has been carried forward to the present while accounting for increases in cost of living.

Attention – The ability to maintain arousal, disengage and refocus attention, and to resist competing demands for attention.

Cross-sectional study – An observational study that examines a subset of the population at a single point in time.

Delay of gratification – The ability to inhibit impulse behavior and shift attention away from tempting objects to forgo an immediate reward in order to gain a more substantial one later.

Empathy – The ability to experience thoughts and feelings from the perspective of another person.

Environmental chaos – Generally refers to the level of noise, degree of crowding and foot traffic, the routine, predictability, and organization of the home environment.

Exogenous shock or Natural experiments – An observable phenomenon that happens naturally and approximates the properties of a controlled experiment.

Experiments – A method of investigating causal relationships in a controlled environment. Participants are randomly assigned to treatment and control groups that differ only on the variable of interest.

Fixed effects study – Fixed effects methods attempt to control for all stable characteristics of an individual in order to minimize or eliminate selection bias.

Inhibitory control – The ability to control one's behavior by inhibiting responses to irrelevant stimuli while pursuing a goal.

Longitudinal study – An observational study that examines a subset of the population over more than one point in time. If a variable of interest is measured at many points in time, it can be controlled for at an earlier point in order to determine change in the outcome over time.

Relative poverty measure – The extent to which a household's financial resources fall below the

median income of the all the other households in the measurement area.

Selection bias – Spurious associations between variables of interest in a research study often due to unmeasured characteristics.

Introduction: Poverty and Child Development

In 2005, nearly one-fifth of America's children were living in poverty. American individuals and families are considered to be living in poverty if their total household pre-tax income is less than the federal poverty threshold for a family of the same size and composition.

In the United States, the federal poverty threshold is defined in absolute terms based on a number generated in 1960 that has been carried forward accounting for increases in the cost of living. However, in Europe, a measure of relative poverty is used. Relative poverty is the extent to which a household's financial resources fall below the median income of all other households in that measurement area. Regardless of what standard of poverty is used, it is clear that child poverty in the US is alarmingly high. On a measure of relative poverty, the US ranks 24th out of the 25 industrialized countries with respect to child poverty; using an absolute poverty measure, the US occupies the 12th place (see **Figure 1**).

Within the US, a family of three living at 100% of the federal poverty level in 2005 had an annual pre-tax income of \$15 720 (US Census Bureau, 2006a). Those living with incomes below 50% of the federal poverty level experience extreme poverty; in 2005, 7.2% of families with children were living in extreme poverty. Although the number of minority children in the general population is smaller than the number of white children, black and Hispanic children are overrepresented in the poverty population; approximately 25% of black children and nearly 22% of Hispanic children were poor in 2005, compared to 8.3% of white children (US Census Bureau, 2006b).

The prevalence of child and family poverty in the United States has contributed to a flurry of research in recent years around the impact of economic deprivation on the developmental trajectories of children. Not surprisingly, studies have found negative associations between poverty and child development in families who cannot

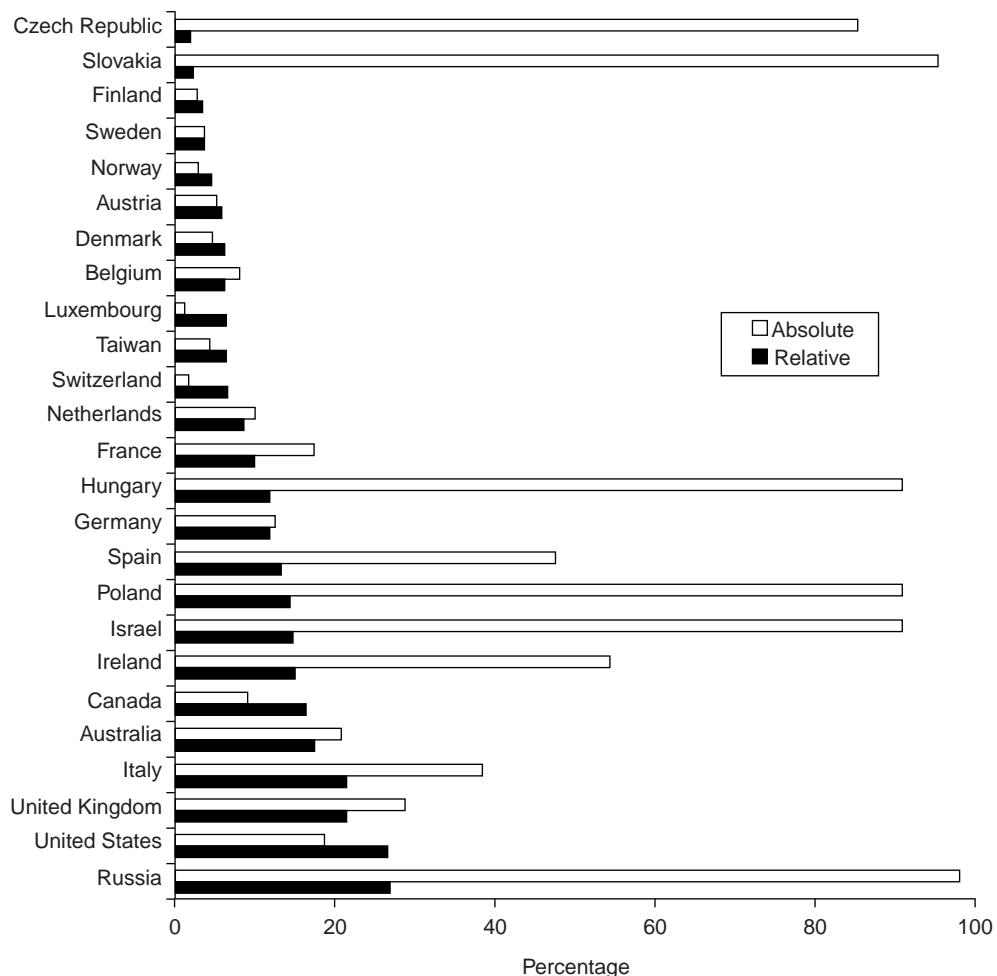


Figure 1 Percentage of children living in poverty in industrialized nations using relative and absolute measures. Relative poverty rate is 50% of overall national median income for survey year. Absolute rate is \$15 299, based on 1995 US official poverty line for a two-parent family with two children. Adapted from Bradbury, B. and Jäntti, M. (1999). Child poverty across industrialised nations. *Innocenti Occasional Papers, Economic and Social Policy Studies*, no. 71. UNICEF International Child Development Centre, Florence, Italy.

afford basic goods and services such as food, clothing, and healthcare (e.g., Aber *et al.*, 1997; Brooks-Gunn and Duncan, 1997; Betson and Michael, 1997; Havemen and Wolfe, 1994). (The majority of poverty research is based on correlational work which largely limits the ability to draw causal conclusions. Therefore, debates occur as to whether income matters at all, or whether income effects can be attributed to selection bias – spurious associations due to some unmeasured characteristics. For this reason, researchers place more credence on some research designs than others; in order from least to most: cross-sectional studies, longitudinal studies where initial outcomes are controlled at an earlier time point so a change in outcomes is analyzed (Duncan *et al.*, 1994), studies looking at change in income and in outcomes (Chase-Lansdale *et al.*, 2003), fixed effects or sibling effects, exogenous shock or natural experiments, and experiments (Fauth and Brooks-Gunn, *in press*). A number of studies have examined the negative role that poverty plays in shaping children's cognitive skills and school achievement outcomes. In particular, such research

suggests that poor children are more likely to score lower than their middle-class peers on standardized achievement tests (Smith *et al.*, 1997), and more likely to experience developmental delays and disabilities than their nonpoor classmates (Brooks-Gunn and Duncan, 1997). In fact, the achievement gap between low-income children (as young as 2 years) and their middle- and upper-class peers persists and even widens as children grow older (Baydar *et al.*, 1993; Phillips *et al.*, 1998; Rouse *et al.*, 2005).

As links between income and children's cognitive outcomes have generally been more consistent than links between income and children's social and emotional outcomes (Bradley and Corwyn, 2002), and because socio-emotional outcomes tend to be more difficult to measure than cognitive skills, much of the research on poverty and development has focused on school readiness and achievement skills. However, a growing body of literature suggests that poverty also hinders the healthy development of social and emotional skills in children of all ages (e.g., Bradley and Corwyn, 2002; Brooks-Gunn and Duncan, 1997; Evans,

2004; McLoyd, 1998; Duncan *et al.*, 1994; Korenman *et al.*, 1995; McCabe *et al.*, 2004; McLeod and Shanahan, 1993; Sameroff *et al.*, 1987).

This article explores links between poverty and children's social and emotional development. We begin with a brief definition of social and emotional development as it is currently understood in the research literature along with its association with poverty. Next, we examine the moderating role that depth, persistence, and timing of poverty have on the association between income and socio-emotional development and the mechanisms through which poverty and its correlates impinge on early development: parents, the home environment, early education and care settings, and neighborhoods (Romano *et al.*, 2005). Finally, we conclude with a brief discussion of the policy implications that extend from research findings on the impact of poverty on social and emotional development, as well as suggestions for future reading.

Poverty and Child Social and Emotional Development

Developmental psychologists and researchers generally agree on a broad definition of social and emotional development that includes a host of behaviors, typically grouped along two dimensions: internalizing behaviors such as anxiety, withdrawal, and depression (three distinctive behaviors that are often combined when studying children) and externalizing behaviors such as aggression, fighting, and acting out (Brooks-Gunn and Duncan, 1997). In addition, the definition of social and emotional development also includes emotion regulation (including inhibitory control, a child's ability to control one's own behavior, and delay of gratification, a child's ability to inhibit impulsive behavior and shift attention away from tempting objects (Blair, 2002; Cole *et al.*, 2004; Eisenberg, 2001; Eisenberg and Fabes, 1998; Fantuzzo *et al.*, 2005; Li-Grining, 2007; McCabe *et al.*, 2004; Raver, 2004) and attention. Attention refers to a child's ability to maintain arousal, ability to disengage and refocus attention, and the ability to resist competing demands for attention (Posner and Rothbart, 2000).

Data collected on children's social and emotional development are often based on observations of children in structured situations in order to elicit inhibitory control, delay of gratification, emotional knowledge, attention, and empathy. Data may also be collected through parent and teacher reports of children's emotional and behavioral symptoms. Symptoms generally fall on a continuum, allowing researchers to study children who may at some point have mild or moderate levels of psychopathological symptoms in order to determine how they influence particular outcomes. Although less common in large-scale, representative research, classifications of social and emotional diagnosable disorders allow

researchers to study people in terms of groups based on a set of criteria. Some studies have found that the effect of symptoms is as meaningful as psychiatric diagnosis for later consequences of childhood disorders (Jensen *et al.*, 1999).

As the associations between poverty and child outcomes can emerge as early as pregnancy (Wood, 2003), longitudinal studies help us understand links between early environmental conditions and subsequent developmental consequences that emerge over time. On average, children in poverty display more internalizing and externalizing social and emotional developmental problems (Brooks-Gunn *et al.*, 1999; Duncan *et al.*, 1994; McLeod and Shanahan, 1993; McLeod and Shanahan, 1996), as well as decreased emotional regulation and attention (Izard *et al.*, 2008).

Although income is positively correlated with child outcomes, the trend is not linear. Deep poverty is indeed associated with the most negative child outcomes; however, the slope of the line is steeper at the bottom of the income distribution, meaning that one dollar matters more for those children than it does for those higher on the income distribution (Duncan *et al.*, 1998). Exploring how poverty matters differently for social and emotional outcomes based on the depth (or severity) of poverty, the timing of poverty during childhood, and the persistence or length of time poverty is experienced, leads into a discussion of the moderators between poverty and child social and emotional outcomes (Brooks-Gunn and Duncan, 1997).

Depth of Poverty

The finding that deep poverty is especially deleterious for early development is bolstered by evidence from different studies demonstrating that children at the lowest end of the income distribution are most dramatically affected by limited resources (Dearing *et al.*, 2001; Duncan *et al.*, 1998). As mentioned earlier, those in deep poverty are less likely to have access to basic resources and services such as healthy food, safe shelter, medical care, transportation, and stimulating home environments. Children living in deep poverty are likely to encounter a greater number of risk factors than are their less- or nonpoor peers, therefore enduring accumulating risks on development. Research on the National Longitudinal Survey of Youth (NLSY), a national survey spanning from 1986 to 1994 with an overrepresentation of economically disadvantaged respondents, suggests that young children in deep poverty display increased anxiety, withdrawal, and depression compared to less- or nonpoor children, and that the gap between children of different socioeconomic levels widens as children age. For slightly older children (5–8-year-olds), deep poverty was associated with increased aggression, fighting, and acting out (Brooks-Gunn *et al.*, 1999). However, increases in income may also have the greatest positive impact for children living in the deepest poverty. Data from the National

Institute of Child Health and Human Development Study of Early Child Care (NICHD SECC), a longitudinal study designed to follow the childcare experiences of more than 1000 families and their children from birth, reflect that children in poverty who experience a rise in income during the first 3 years of life scored similarly to nonpoor children on behavioral outcome measures. While increases in income seem to have little association with the outcomes of children who were not living in poverty, a small (10%) increase in family income was associated with a decline in negative behavior of children who were poor (Dearing *et al.*, 2001; Taylor *et al.*, 2004), also suggesting that monetary increases are most important for families with the lowest incomes.

Persistence of Poverty

Similarly, the associations of poverty and development vary with the length of time poverty is experienced, such that families in chronic poverty face more prolonged and extensive negative life events and stressors than do families living in transitory poverty (Linver *et al.*, 2002). Children in the NLSY who experienced long-term poverty demonstrated increased internalizing problems (dependence, anxiety, and unhappiness), while those who experienced transient poverty displayed hyperactivity and headstrong behavior (McLeod and Shanahan, 1993). Additionally, the internalizing problems were observed in a follow-up study by the same authors several years later, regardless of further changes in income, suggesting that the negative impact of poverty on social and emotional development may endure over time (McLeod and Shanahan, 1996). The finding that long-term poverty was linked to internalizing problems in children of the NLSY is supported by evidence from another longitudinal study, the Infant Health and Development Program (IHDP; a randomized, multisite early intervention program for premature, low birth-weight children from families of varying socioeconomic levels). IHDP children who experienced enduring poverty demonstrated increased externalizing and internalizing behavior problems (Duncan *et al.*, 1994). Conversely, when families are lifted out of poverty, children may experience improvements in social and emotional outcomes. Income over time was studied using a natural experiment that evolved during a longitudinal study of American Indian and predominately white children living on a reservation in a rural community. Unlike the longitudinal, nonexperimental studies described thus far, this study was able to examine the links between poverty and child outcomes under experimental conditions, therefore ruling out many alternative explanations and spurious associations often characteristic of longitudinal data. After a casino opened on the Indian reservation, the incomes of the American Indian families increased while those of the white families stayed the same. Increased family income was associated with a significant decrease in observed psychiatric symptoms for those children whose

families moved out of poverty as a result of the introduction of the casino. Moreover, children whose families were lifted out of poverty with the additional income demonstrated reduced behavioral problems such that they matched children whose families had never been poor. Children's emotional problems, however, were unaffected by the change in income (Costello *et al.*, 2003).

Timing of Poverty

Research findings on the impact of the timing of poverty on development have been mixed. On the one hand, there is evidence that poverty in early childhood is more harmful to long-term behavioral outcomes than is poverty in later childhood or adolescence (Duncan and Brooks-Gunn, 2000). Some have hypothesized that, because very young children are biologically vulnerable, early deprivation has particularly negative consequences. Evidence suggests that, as a period of rapid and neurological development occurs between the ages of 0 and 3, children who do not have access to rich, stimulating environments during this crucial period are more likely to demonstrate deficits in healthy development (Shonkoff and Phillips, 2000).

On the other hand, there is evidence that implies children who experience poverty later in life have less favorable developmental outcomes than do their younger counterparts. For instance, research suggests that children who experienced poverty in middle childhood (between the ages of 4 and 9) demonstrated increased social and behavioral problems (Hofferth, *et al.*, 2000; NICHD Network, 2005), while a study on the well-being of children whose mothers returned to work after the 1996 welfare reforms found heightened social and emotional problems in the adolescent children of welfare recipients (Gennetian *et al.*, 2004). Therefore, it remains unclear what the impact of timing of poverty may be.

Mechanisms/Pathways

The pathways (or processes) of poverty refer to the mechanisms that explain how poverty works to produce negative child outcomes, and offer points of intervention for policies and programs. Research on these pathways can be organized into four categories: parenting, the home environment, education and care settings, and neighborhoods.

Parenting: The family stress model

Positive child outcomes typically flow from warm parent-child interactions, cognitive stimulation, clear limit-setting, and adequate monitoring (Bornstien, 2002). However, the psychological stress that accompanies poverty, resulting from the disruption of family relationships, unpredictable work schedules, and unstable income, can negatively affect parenting behavior which may subsequently contribute to poor child outcomes. Families that experience either

short-term financial loss or persistent poverty struggle to supply food, shelter, safety, and clothing; these struggles lead to increased levels of depression and anxiety for parents (McLoyd, 1990); notably, linkages between parenting stress and poor parenting practices are more pronounced for families in deep poverty (Petterson and Albers, 2001). In general, poverty has been connected to harsh parental behaviors associated with risk such as physical disciplining practices (Dodge *et al.*, 1994; Linver *et al.*, 2002), decreased attentive and responsive parenting (Dodge *et al.*, 1994; Jackson *et al.*, 2000; Smith *et al.*, 2001), and decreased levels of parental support (Jackson *et al.*, 2000). These parenting behaviors can lead to the deterioration of the parent-child relationship, especially in disadvantaged families (Petterson and Albers, 2001). In sum, the links between financial strain, parental stress, the disruption of family relationships, and ultimately negative child outcomes represent the crux of the family stress model.

Researchers have applied the family stress model to low-income adolescents, school-aged children (McLeod and Nonnemaker, 2000; Sampson and Laub, 1994), and young children (Dodge *et al.*, 1994; Duncan *et al.*, 1994; Jackson *et al.*, 2000; Linver *et al.*, 2002; McLeod and Shanahan, 1993; Yeung *et al.*, 2002), and have found evidence that families in stress can either exacerbate or serve as buffers against the negative child outcomes associated with poverty. For instance, a study by Linver *et al.* (2002) documented that income was associated with behavior problems and that authoritarian and harsh parenting, resulting from maternal emotional distress, accounted for the link between income and behavior problems for 3- and 5-year-olds in the IHDP sample. Similarly, in a study on 93 working mothers (who were poor) and their children, financial strain was found to be associated with increased depressive symptoms which were negatively linked with parenting quality and in turn led to negative child behavioral outcomes (Jackson *et al.*, 2000).

On the other hand, parents who engage in positive parenting despite stress factors due to poverty can buffer the negative association between poverty and child outcomes. In a classic study from the Great Depression, Elder and Caspi (1988) report that emotionally stable fathers were less likely to resort to negative parenting despite dramatic income loss, in turn positively influencing their children's self-esteem. In a second study, findings from parents in a poor rural community who were classified as nurturing and involved suggest that such positive parenting buffered the association between income stress and their children's development (Conger and Conger, 2000). Fortunately, social services, community-based programs, and early intervention programs, including home visiting components, are all potential sources of support, assistance, and information for parents that can improve parenting and, as a result, the child socio-emotional well-being (although results differ as a function of the intervention, with some

programs not finding effects; Barnes *et al.*, 1995; Benasich *et al.*, 1992; Brooks-Gunn *et al.*, 2000; Brooks-Gunn and Markman, 2005). Thus, the family stress model addresses an important pathway through which poverty operates on child social and emotional outcomes, and offers an opportunity for intervention and enhancement through social programming.

The home environment

While the family stress model emphasizes the association between income, parenting, and family relationships, the home environment itself is another pathway through which poverty may impact child development. As mentioned earlier, poverty almost certainly limits a family's ability to purchase material goods and experiences, to spend quality time with children, and to provide a safe and calm living environment that is conducive to healthy social and emotional development.

Research suggests that children from economically impoverished families have limited access to a variety of learning materials, such as books and educational toys (Bradley *et al.*, 2001), but that exposure to print materials and stimulating games may mitigate some of the negative links between poverty and child outcomes (Yeung *et al.*, 2002), as well as provide an opportunity for social exchanges between children and adults (Bradley and Corwyn, 2002).

In addition to having limited access to resources, a study using data from the NLSY found that the physical environments of families in poverty are generally less safe, less clean, darker, and more cluttered than those of nonpoor families (Bradley *et al.*, 2001). Furthermore, the lack of structure and routine, combined with increased environmental chaos that is more prevalent in low-income households, has been shown to have negative associations with child social and emotional development (Evans *et al.*, 2005).

Unfortunately, low-income households often lack important learning materials and resources in the home environment associated with positive child social and emotional outcomes. However, balancing monetary and time-related needs is especially challenging for low-income families because poor parents who work sacrifice time with their children without gaining much buying power from income in exchange (Ryan *et al.*, 2006).

Early childhood education and care

Yet a third pathway through which poverty may impact child development is by way of children's early childhood education and care (ECEC) environments. Specifically, there is promising evidence that quality ECEC settings are linked to improved child outcomes (e.g. Schweinhart *et al.*, 2005). Quality in ECEC refers to aspects of developmental environments recognized by researchers to promote and enhance early learning, including, but not limited to, low child-to-adult ratios, high levels of caregiver

education and qualification, stimulating and responsive interactions between the child and caregiver, and the availability of appropriate toys and learning materials; such aspects of quality in ECEC settings have been linked to improved cognitive and social outcomes for young children (Blau, 2001; Burchinal and Cryer, 2003; Lamb and Ahnert, 2006; NICHD Network, 2000; Shonkoff and Phillips, 2000). For children in poverty, high-quality ECEC may improve school readiness and subsequent chances for school success, financial independence, and social stability (Heckman and Lochner, 2001), and studies have found that the poorest children may benefit the most from high-quality ECEC programs (Brooks-Gunn, 2003; Brooks-Gunn *et al.*, 1993). Unfortunately, not all ECEC environments are of high quality. Recent findings from the Early Childhood Longitudinal Study Birth cohort (ECLS-B), report that 75% of infants and toddlers in center-based care were in care that was of low-to-medium quality, while only 24% were in high-quality centers (Mulligan and Flanagan, 2006). For poor children, low-quality care may add to the multitude of risk factors already present in a child's life.

Despite discouraging evidence regarding the quality of available care, there is reason to believe that when care is of high quality, low-income children experience long-term benefits. As space does not allow for a comprehensive review of the ECEC literature, we highlight findings from random-assignment experimental evaluations of high-quality model ECEC programs. When studies involve random assignment of subjects to treatment conditions (in this case, to receive or not to receive quality ECEC services), the possibility that noted differences after the conclusion of the study are due to the program being tested is higher than it would be if subjects chose, or selected themselves into, the different conditions. Thus, observed differences in performance or outcomes between subjects who were randomly assigned to a given condition or to the control group (children who did not participate in the high-quality ECEC program) are less likely to be due to unobserved, preexisting differences between groups and more likely to be attributed to effects of the program itself.

Beginning in the 1960s, researchers have conducted several experimental evaluations of the so-called model ECEC programs. These programs, which enroll low-income youngsters, typically offer children cognitively stimulating educational curricula directed by qualified staff in classrooms with low child-to-staff ratios, and often include parenting classes, health and nutrition components, and a home-visiting dimension. Low-income children who participated in the Infant Health and Development Program (IHDP) exhibited short-term positive changes in behavior; however, there is evidence that participation in high-quality ECEC programming can contribute to sustained socio-emotional benefits as well. For instance, children who attended Perry Preschool demonstrated fewer conduct and behavioral problems than did control-group children

up to 15 years after the conclusion of the intervention (Schweinhart *et al.*, 1993). Program children continued to experience lower rates of criminal arrest and decreased delinquent behavior through age 40 (Schweinhart *et al.*, 2005). Children who received ECEC services from the Carolina Abecedarian Project were less likely than those who did not demonstrate the negative social and behavioral outcomes typically associated with childhood poverty, such as teen pregnancy and delinquent behavior, at ages 15 and 21 (Campbell and Ramey, 1994).

The neighborhood

Families, homes, and ECEC settings all exist within communities or neighborhoods and are inextricably linked to the characteristics of that area. However, aside from these elements, other neighborhood characteristics are also linked with child development. Therefore, the neighborhoods in which families reside are another possible pathway of influence through which income operates on child social and emotional outcomes.

The structural and demographic features of neighborhoods and communities are likely to affect child and adolescent outcomes, through community-level social and cultural processes such as community monitoring, the number and quality of social ties, organizational participation, and value consensus. For example, neighbors may serve as role models and exercise social control, helping young people to internalize social norms and learn the boundaries of acceptable behavior (Gephart, 1997; Jencks and Mayer, 1990; Xue *et al.*, 2005). Alternatively, low-income families are often limited in their choice of neighborhoods and find themselves in areas with social disorganization such as crime, unemployed adults, and few resources such as playgrounds and parks (Brooks-Gunn and Duncan, 1997). Overall, research has found that living in areas of concentrated poverty is linked with a negative impact on child and adolescent development (Brooks-Gunn *et al.*, 1997; Jencks and Mayer, 1990; Leventhal and Brooks-Gunn, 2000), as residence in low-income neighborhoods has been associated with increased child behavior problems, anxiety, and depression over and above family poverty (Chase-Lansdale *et al.*, 1997).

The ways that neighborhoods function to impact children in poverty have been studied using two large, longitudinal data sets. The Project on Human Development in Chicago Neighborhoods (PHDCN) is a multi-level, longitudinal study of a representative sample of children aged 5–11 years recruited from 80 neighborhoods and conducted in the late 1990s. In the PHDCN sample, concentrated neighborhood disadvantage was associated with more frequent and more severe mental health problems than other neighborhood socio-demographic characteristics after controlling for family demographic characteristics, maternal depression, and earlier child mental health scores (Xue *et al.*, 2005). This finding is

consistent with prior research on the same sample, linking concentrated disadvantage to neighborhood violence (Sampson, *et al.*, 1997), and suggesting that the social emotional health of children in poverty who reside in neighborhoods of concentrated disadvantage may suffer. However, data from the Moving to Opportunity Program, another randomized study of low-income families living in poor neighborhoods, found mixed results in terms of neighborhood wealth or poverty and social and emotional development (Leventhal and Brooks-Gunn, 2005).

Policy Implications

Childhood is a time of great vulnerability, in part because the developing social and emotional competencies of poor children are especially susceptible to the obstacles that growing up in poverty presents. However, childhood is also a time of great opportunity; the developmental trajectories of children and young adolescents are malleable, and thus these sensitive periods offer windows for intervention. Given what we know about the depth, persistence, and timing of poverty, programs that increase household income even modestly, that intervene to break up what would otherwise be extended cycles of poverty, and that offer social safety nets for children at all stages of development would be beneficial investments for society.

Moreover, research that has illuminated the range of pathways through which poverty presents obstacles to the healthy development of poor children has also highlighted a variety of options for enhancing the lives of poor children. With respect to parenting, the federally funded Early Head Start (EHS) program, which includes parenting classes, parental support groups, and home-visiting components targeted at improving parenting practices, shows some promise regarding more supportive parent-child interaction and increased episodes of parent-child reading compared to families who did not receive EHS services (Love *et al.*, 2005). Likewise, programs that incorporate home-visiting elements may also enhance the home environment of children in poverty.

With respect to ECEC, it is clear that high-quality ECEC programs that begin early, offer a comprehensive set of services, and that adhere to recognized standards of quality have a great deal of potential to boost developmental outcomes of children in poverty. Increased access to subsidies for childcare would increase the purchasing power of low-income families so that they might be able to buy into higher-quality care. In the meantime, continued support for the federal Head Start Program is crucial; begun in the 1960s, the comprehensive, wrap-around, center-based services offered by Head Start include ECEC that is, on average, of higher quality than a majority of other preschool programs (Currie, 2001). Additionally, recent research suggests that Head Start does have the

potential to substantially decrease the school readiness gap that exists between minority children (who tend to be low income), and their white peers (Magnuson and Waldfogel, 2005). However, a concern for those interested in intervening early in the lives of poor children is that only families below the federal poverty line are eligible for childcare subsidies and Head Start enrollment; families who are near-poor and endure many of the same stressors as poor and deep-poor families are nonetheless ineligible for many of the social services that would enhance their children's development. Thus, making ECEC programming universally available is an approach to intervention that can benefit extremely poor as well as near-poor children. Indeed, state-level initiatives, such as those in Oklahoma and Georgia to implement universal prekindergarten to all 4-year-old children, have demonstrated positive impacts on child development (Gormley and Phillips, 2005; Henry *et al.*, 2001). More effort is needed on behalf of policymakers to increase accessibility and affordability of quality care for children too young for programs like Head Start and universal prekindergarten.

Regarding the impact of neighborhoods as a conduit between poverty and child socio-emotional development, community development initiatives and programs that seek to build social capital in communities have great potential for alleviating many of the negative dimensions of poverty prevalent in low-income neighborhoods. For instance, high degrees of collective efficacy and community cohesion are associated with reduced violent crime and disorder; research findings reflect that collective efficacy within a community mediates the association between concentrated disadvantage and violence (Sampson *et al.*, 1997). As the association between both depression and anxiety in children, and exposure to violence, is well established and collective efficacy may protect children from these neighborhood threats (Xue *et al.*, 2005), a viable goal for community interventions and initiatives may be to increase efficacy.

In sum, it is imperative that policymakers attend to the extensive body of research literature emphasizing linkages between poverty and social and emotional development, as well as the range of options for intervening in and enhancing the lives of poor children. One possibility suggested by recent research is to apply an investment model to early childhood, where dollar-for-dollar increases in societal investments in children are linked to equal or greater pay-offs in terms of societal benefits. Indeed, some have argued that viewing social programs that support early childhood development as economic development initiatives may be the most effective way to marshal resources for interventions critical in setting healthy developmental trajectories (Rolnick and Grunewald, 2003; Schweinhart *et al.*, 2005). Regardless of the approach to intervention, policymakers must implement programs that help, rather than hinder, children's development by supporting families and

children. Without appropriate support mechanisms and intervention strategies, it is likely that poor children will continue to lag behind their nonpoor peers.

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Social and Emotional Outcomes of Learning

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Introduction

In this article, evidence on the social and emotional outcomes of learning, causal and other explanations for their development, and the frameworks in which explanations and outcomes are located, are reviewed.

The relationships between learning and outcomes in health, well-being, citizenship, parenting, and criminality are explored. Attention is also paid to social relations, and these relationships over the life-course and across generations are explored.

This study is not a systematic review. Three sources of evidence are treated with particular interest: (1) Heckman and colleagues on cognitive and non-cognitive development over the life-course; (2) Eccles and Roeser on schools and adolescent development; and (3) Wilczenski and colleagues on social and emotional learning outcomes. We also draw heavily on the evidence the author and his colleagues at the Centre for Research on the Wider Benefits of Learning (WBL) collected and reviewed over the last 7 years. The first three sources are given priority: first, because the authors have themselves conducted substantial reviews of the literature; second, because each has made a significant contribution to the field; and third, because together they represent a variety of disciplines and methods – including interdisciplinary methods – that are necessary to call upon to produce a sound theoretical framework for understanding the relationship between learning and its social and emotional effects.

This article is organized as follows: we first deal with explanatory frameworks. These provide the context for the presentation of evidence in sections that follow. Priority is given to the drivers of the outcomes for individuals from and within the experience of learning, categorized according to whether their primary source lies in compulsory or post-compulsory schooling.

A review of this kind is bound to be strictly circumscribed: we say nothing about the closely related subject of economic returns; in the main we consider social and emotional variables as outcomes and not determinants of learning, and the range of acknowledged learning activities is largely confined to formal environments.

Several omissions deserve notice. Description of method is kept to a minimum; there is no discussion of pre-school or out-of-school programs; and several prominent lines of enquiry are barely touched upon. For example, Heckman *et al.* (2004) present evidence that both

cognitive and non-cognitive skills affect the returns to schooling; increasing non-cognitive ability over the same decile range as cognitive ability has a greater effect on many outcomes than increasing cognitive ability over the same range. This applies, for example, to a reduced likelihood of smoking, spending time in jail by the age of 30, and nonmarital pregnancy outcomes (Cunha: 19). But the literature on the returns to enhancing non-cognitive skills cannot be surveyed.

Many other issues are also omitted, including race, learning difficulties, and bilingualism. In these cases also, there is a large literature attached to each, and that is more than this article can begin to do justice to. That should not be taken to imply that outcomes of these kinds are any fewer or matter any less than those that are explored.

A Framework for Analysis

Complementarity, Self-Productivity and the Skill Multiplier

Cunha *et al.* (2005) consider the life cycle as the proper context in which to interpret evidence on the development of outcomes. As against the influential work of Becker and Tomes (1979), childhood is conceived as a multi-stage process during which early investments feed into later investments.

Over the life-course, genetic, environmental, and personal inputs are variously productive of outputs, in the form of achieved levels of skill. Points of greatest productivity are sensitive periods, and these become critical if one stage alone is productive of a given skill or ability. Skills produced at one point augment skills achieved later on (self-productivity), and skills produced at one stage raise the productivity of investment at subsequent stages (complementarity). Levels of skill at different ages bolster one other, producing a skill multiplier.

This framework explains significant findings from the literature: that skill begets skill and abilities beget abilities (*ibid.*: 5), and that the formation of skills is a dynamic process, whereby those formed at one stage in the life cycle affect the productivity of learning in the next stage (*ibid.*: 12).

Multi-Level Contexts

The work of Heckman and colleagues illuminates research by Eccles and the WBL, whose two models for

conceiving and analyzing learning outcomes are mutually complementary.

Eccles and Roeser examine how schools promote academic, social, and psychological competence. Following Bronfenbrenner, schools are conceived as comprising multi-level contexts; these influence adolescent social-emotional and behavioral development, through organizational, social, and instructional processes, each of which operate at different levels. (Eccles and Roeser, 2003).

The school context is conceived as a “series of hierarchically-ordered, interdependent levels of organization,” beginning at the level of the classroom and moving up in complexity to the school as “an organization system embedded in a larger cultural system” (*ibid.*: 3). There are multiple levels of regulatory processes, usually dynamic, interrelated across levels of analysis, and which develop or change as children move through different school levels. These multi-level processes are interwoven into one another, and relations between different levels of organization in the school can be complementary or contradictory (*ibid.*: 4).

A central point is that the influence of schools on adolescent development is by means of multiple dynamic impacts of different levels of school interacting with each other, rather than the static resources or characteristics of the curriculum, teachers, or school *per se* (*ibid.*). These are not specified in this article (see Eccles and Roeser for a detailed conceptual framework).

The specifics of school-related processes change across the course of children’s and adolescents’ development as they progress through primary, secondary, and tertiary education, and beyond into learning in adulthood. However, throughout development and maturation, interactions between the learner and the learning environment are essential to learning (Eccles and Midgley, 1989; Eccles: 5).

In parallel with the work of Eccles, the WBL has developed a broadly similar multi-level framework for analyzing the wider benefits of learning, recognizing social and emotional outcomes at the level of the individual, family, community, and nation. The model highlights the range of outcomes influenced by education, the multiple, dynamic relationships operating at and between the different levels, and the formative significance of the multiple contexts in which they operate (Preston *et al.*, 2005 and WBL Research Report, No. 11).

A distinguishing feature of the WBL analysis is the concept of social productivity. This concept denotes the capacity of education to support outcomes of social value at each of the levels mentioned above, and to prevent outcomes such as crime, intolerance, mental health problems, disengagement, and social immobility.

Socially valuable outcomes developed in the educational process include skills, capabilities, and social networks. These emerge from interactions in numerous

contexts; they are not simply the product of attendance at educational institutions. Hence, the effects of education will depend on interactions with peers, teachers, and others; on the impact of identity, beliefs, and values; and on the ethos, pedagogy, and curricula comprising the learning environments. The socially productive capacity of learning is evidenced by its impact on variables such as self-concept, self-efficacy, and social capital.

So, for example, Putnam (1993) views education as a valuable source of social capital formation. At the level of primary education, learning can promote societal cohesion and strengthen citizenship when individuals of all socioeconomic backgrounds are enrolled in the public education system. Learning experience can provide opportunities to gain and practice social capital skills, such as participation and reciprocity; to extend and deepen social networks; and to support the development of shared norms and the values of tolerance, understanding, and respect. Learning experience can also provide a forum for community activity and for students to learn how to participate responsibly in their society (Heyneman, 1998; Schuller *et al.*, 2004 and WBL Research Report No. 3).

Organizing the Evidence

In keeping with the framework set out in this section, the evidence in sections 3–7 are considered in relation to the primary levels of analysis – the individual, family, and community – and the primary stages of lifelong learning: childhood, adolescence, and adulthood. No level or stage is intrinsically more important than any other but for reasons of space priority is given to individual-level outcomes for children and adolescents. And while some themes are treated in the context of one level or stage rather than another, this is largely because the evidence reviewed tends to adopt that temporal focus; it is not meant to imply that the themes themselves do not prominently feature at other points in the life-course.

Individual-Level Effects: Childhood and Adolescence

Introduction

The effects treated in this section have been hypothesized as sources of causal impact on social and emotional outcomes. They are individual level effects in the sense that they are construed as the effects of individual agents, operating, for example, as managers, teachers, or deliverers of a curriculum. At the same time it is also recognized that there are alternative legitimate construals, according to which these effects operate at other levels, such as the level of the school or at a level involving other social and organizational agents.

Teacher Expectations

When students are aware of teachers' high expectations, students achieve more, experience higher esteem, and are less involved in problem behavior during childhood and adolescence (Eccles *et al.*, 1993; Rutter, 1983; Roeser *et al.*, 1998; Weinstein, 1989). Teachers who believe they can, reach out to the most difficult students, communicate positive expectations to those students, thereby enhancing the students' confidence in their ability to master academic material (Ashton, 1985; Midgley *et al.*, 1989). When teachers have a low sense of their effectiveness, this can lead to students exhibiting helpless responses to failure in the classroom, and to the development of depressive symptoms (Cole, 1991; Roeser *et al.*, 1999).

Teachers often have varying expectations from students in any one class. Rosenthal (1969) argues that teacher-expectancy effects depend on whether teachers structure activities differently, and interact differently, with high- and low-expectancy students, and on whether these differences are perceived by the students (Brophy, 1985; Parsons *et al.*, 1982; Weinstein, 1989). One focus of research is differential treatment in respect of gender, ethnicity, and social class. Studies report small but consistent undermining effects of low-teacher expectations from girls (mathematics and science), minority groups (all subject areas), and children from low social-class backgrounds (all subject areas). (Eccles and Roeser, 2003; Brophy and Good, 1974; Ferguson, 1998; Jussim *et al.*, 1996; Valencia, 1991).

Classroom Management

Research on classroom management gives evidence of the effects of orderliness and predictability. Student achievement and conduct improves when teachers provide feedback, and establish smoothly run and efficient procedures for monitoring student progress and work completion (Blumenfeld *et al.*, 1983; Eccles *et al.*, 1998; Pintrich and Schunk, 1996).

Boggiano, Deci, and Ryan suggest that overly controlling, autonomy-inhibiting environments undermine intrinsic motivation, ability self-concepts, and self-direction, and, instead, encourage a learned helpless response to difficult tasks. Laboratory and field-based studies provide support for this view (Boggiano *et al.*, 1992; Deci *et al.*, 1981; Grolnick and Ryan, 1987).

While direct instruction has a positive impact on student achievement, research also suggest that students exhibit more stress in didactic as compared with student-centered contexts (Dunn and Kontos, 1997). More open classroom contexts encourage students to be more creative, hold better self-concepts, and more positive attitudes toward teachers and school, and to demonstrate greater independence and curiosity (Dunn and Kontos, 1997; Peterson, 1979; Reynolds, 1975).

The Curriculum

The significance of providing learning materials that are meaningful to students is borne out by the association between low interest in and perceived irrelevance of the school curriculum on the one hand, and poor attention, disengagement, and alienation from school on the other (Jackson and Davis, 2000; Finn, 1989; Larson and Richards, 1989). Curricula that fail to represent the voices and experience of traditionally underrepresented groups can also explain the alienation of some group members from the educational process (Fine, 1991; Sheets and Hollins, 1999; Barton).

Many school programs aim to improve outcomes by supporting students' self-image and self-esteem. But Wilczenski argues that enhancing social and emotional outcomes requires a focus on mastery in the classroom rather than student self-perceptions (Wilczenski *et al.*, 2001: 4). Socioemotional learning cannot be separated from the instructional mission of schools, because social and emotional adjustment mediates academic competence and resilience (Shapiro, 2000).

Peer Collaboration, Tutoring and Mentoring

Collaboration among peers fosters socioemotional development (Slavin, 1980; Sharan, 1980), including better attitudes toward learning, better self-concepts, better attitudes toward others, and better racial relationships (Bossert, 1988/1989; Slavin, 1990). Peer-tutoring programs frequently show socioemotional gains: tutees are described as more cooperative and respectful toward peers and teachers, while also exhibiting higher self-esteem (Gensemer, 2000; Phillips *et al.*, 1994; Roswal *et al.*, 1995).

There is evidence of the effectiveness of mentoring and motivational programs for disadvantaged teenagers, largely stemming from the benefits of fostering motivation and improving non-cognitive skills (Karoly *et al.*, 1998; Currie and Blau, 2005; Heckman, 2000). Studies of Big Brothers/Big Sisters (BB/BS) and Philadelphia Futures sponsor-a-scholar (SAS) programs show positive social effects on school-aged children and adolescents. BB/BS paired unrelated adult volunteers with young people from single-parent households. Tierney and Grossman (1995) found that 18 months after being matched with a mentor, Little Brothers and Sisters (aged 10–16 at the time of the match) were less likely to have used drugs or alcohol, to skip class or a day of school, or to lie to their parents; they were more likely to feel competent in their school work and to report a better relationship with parents (Cunha, 2005).

Ability Grouping

Individuals may be grouped by ability either within a class or between classes. The evidence on socioemotional outcomes appears to favor ability grouping for high ability

but not low-ability students (Fuligni *et al.*, 1995; Gamoran and Mare, 1989; Kulik and Kulik, 1987).

The argument in favor of ability grouping includes the point that students are more likely to learn when material is well matched to their competence. There is evidence consistent with this for children in high-ability classrooms and high within-class ability groups (Dreeben and Barr, 1988; Fuligni *et al.*, 1995; Pallas *et al.*, 1994). Shields (1996) found that, compared to heterogeneously grouped gifted students, homogeneously grouped gifted students showed higher self-concepts, self-acceptance, and independence. Feldhusen and Moon (1992) argue that heterogeneous grouping for gifted students leads to lower motivation and poorer attitudes toward school.

Eder and Felmlee (1983, 1984) explored attention patterns in low- and high-ability first-grade reading groups. They controlled for individual characteristics that included personal attention patterns, and found that students in low-ability groups became inattentive at four times the rate of students in high-ability groups. Eder and Felmlee observed that teachers of high-ability groups quickly managed inattentiveness or disruption whereas teachers of low-ability groups tended to ignore this. Peer effects were observed: high-ability groups applied pressure to maintain attention during interruptions, while low-ability groups tended to use interruptions as an opportunity to distract attention from the current task. Schwartz (1981) observed the behavior in low-ability classes among elementary and junior high school students, and found it to be characterized by challenges to teacher authority, obstruction of academic activities, and misuse of educational resources. These findings indicate that social influences in low-ability groups may overwhelm any instructional advantages to grouping (Wilczenski, 1981: 10).

The Lou *et al.* (1996) meta-analysis of studies of within-class grouping found small but positive effects of placing students in groups; they were more positively disposed toward schools and had higher self-concepts than students in ungrouped classes. However, the same studies show negative socioemotional effects of grouping low-ability students together, in part owing to the low-expectations of teachers and the absence of positive role models. Being placed in between-class low academic groups is also associated with poor attitudes toward school, feelings of incompetence, and problem behaviors (Oakes *et al.*, 1992), effects often accounted for by inferior educational experience (Dreeben and Barr, 1988; Pallas *et al.*, 1994; Vanfossen *et al.*, 1987).

School-Level Effects: Childhood and Adolescence

Social Climate

The academic focus of a school can affect mental health. A series of studies found that a belief that school is

ability-focused can lead to a decline in students' self-esteem, and an increase in anger, depressive symptoms, and school truancy when moving from seventh to eighth grade (Roeser and Eccles, 1998; Roeser *et al.*, 1998). An emphasis on ability can alienate many of those students unable to perform at the highest levels, leading to anxiety, anger, and disenchantment (Eccles and Midgley, 1989; Finn, 1989). Schools emphasizing effort, improvement, and the expectation that all students can learn, appear to include more adolescents in the learning process, while also reducing depression and the anxiety that achievement settings can give rise to (Eccles and Roeser, 2003: 18).

Fiqueira-McDonough (1986) compared two high schools that were similar with respect to intake and achievement rates but different with respect to academic orientation and rates of delinquent behavior. The school putting more emphasis on competition and high grades had higher delinquency rates and delinquent behavior was predicted by low grades. For the school with more diverse goals, taking a greater interest in students' non-academic needs, school attachment was greater on average, with higher delinquency rates associated with low-levels of attachment. The emphasis on motivation and diversity may have promoted an attachment to school, thereby discouraging delinquency.

Transitions

There is evidence that academic motivation and achievement decline during early adolescence (Eccles, 1994; Eccles and Midgley, 1989; Eccles *et al.*, 1993; Maehr and Midgley, 1996), often coinciding with the transition into middle school or junior high school. There is a decline in some early adolescents' school grades as they move into junior high school (Simmons and Blyth, 1987), and similar declines occur for interest in school (Epstein and McPartland, 1976), intrinsic motivation (Harter, 1981), and self-concepts (Eccles *et al.*, 1989; Wigfield *et al.*, 1991). There are also increases in test anxiety (Wigfield and Eccles, 1989) and both truancy and school dropout (Rosenbaum, 1976). Eccles and Midgley (1989) suggest that junior high schools typically lack educational environments that are developmentally appropriate for early adolescents.

Teaching practices

Researchers observe the combination of increasing maturity of high school students and greater teacher emphasis on control and discipline, providing fewer opportunities for student decision making as compared with elementary school teachers (e.g., Brophy and Evertson, 1978; Midgley and Feldlaufer, 1987; Moos, 1979). The evidence confirms what stage-environment fit theory suggests: the discrepancy between the wish for autonomy and control, and the actual opportunities for students in the classroom, leads to

a decline in motivation and interest in school (Mac Iver and Reuman, 1988).

Students entering junior high school face more in the way of whole-class task organization and between-classroom ability grouping (Eccles and Midgley, 1989; Oakes *et al.*, 1992). This is likely to increase social comparison and competitiveness (see Eccles *et al.*, 1984; Rosenholtz and Simpson, 1984), while the use of grading and public assessment has a negative affect on early adolescents' self-perceptions and motivation.

Classroom practices can be distinguished by the priority given to either task mastery or to performance goals. Teachers and learners testify that, as adolescents move from elementary to middle school, the school environment is increasingly focused on performance – competition, relative ability, and social comparison (Midgley *et al.*, 1995; Roeser *et al.*, 1994). How far teachers were task-focused at both levels predicted students' and teachers' sense of personal efficacy, this being lower among middle school participants than among elementary school participants.

Anderman *et al.* (1999) compared two groups of young adolescents: the first moved into a middle school emphasizing task-focused instructional practices, the second into a middle school emphasizing performance-focused instructional practices. The two groups of students were found to differ in their motivational goals following the transition, although these had not differed beforehand; the adolescents moving into the first school were less likely to show an increase in extrinsic motivational and performance-oriented motivational goals.

Eccles and Midgley argue that changes in school environment are often harmful for young adolescents: "the nature of these environmental changes, coupled with the normal course of individual development, is likely to result in a developmental mismatch so that the 'fit' between the early adolescent and the classroom environment is particularly poor, increasing the risk of negative motivational outcomes, especially for adolescents who are having difficulty succeeding in school academically" (Eccles and Midgley, 1989).

Individual-Level Effects: Adult Learning

Introduction

The term adult learning refers to the learning that follows the years of compulsory schooling. In the United Kingdom this is referred to as post compulsory or post-16 learning, and includes, among other contexts, higher education, further education, the workplace, and adult and community learning.

Health, Well-Being, and Social Inclusion

Analysis by the WBL (WBL Research Report No. 6) of the 1958 National Child Development Study (NCDS)

and the 1970 British Cohort Study (BCS70) suggests considerable health advantages associated with having higher-level qualifications. For example:

- Graduates are less likely to smoke: those educated to level 2 or below are 75% more likely to be smokers at age 30, compared to similar individuals educated to degree level or higher.
- Those educated to degree level or higher are between 70% and 80% more likely to report excellent' health, compared to a similar individual educated to level 2 or below.
- Graduates are between 35% (women) and 55% (men) less likely to suffer from depression, compared to a similar individual educated to level 2 or below.

The WBL also found in the British Household Panel Study (BHPS), a strong relationship between educational success and progress at 16 and uptake by women of recommended cervical smear tests (WBL Research Report No. 12).

Civic engagement

Feinstein and Hammond (2004) and WBL Research Report No. 8) used the 1958 cohort to examine the contribution of adult learning to a wide range of health and social-capital outcomes. Analysis focused on changes between the ages of 33 and 42 in life outcomes for adults, controlling for their development and context up to age 33.

It was found that participation in adult learning has positive effects on a wide spectrum of health and social-capital outcomes with statistically significant effects of participation on nine of the 12 outcomes looked at. These outcomes are changes in smoking, exercise taken, life satisfaction, race tolerance, authoritarian attitudes, political cynicism, political interest, number of memberships, and voting behavior.

Research on race tolerance combined with authoritarianism (Preston *et al.*, 2005 and WBL Research Report No. 11) found that adult education may be important in sustaining non-extremist views, but it does not appear to be associated with a transformation away from extremist positions.

School-age signals

The WBL has explored how far-emerging aspects of child development have implications for their long-term health and well-being as adults. Using the 1958 cohort, eight proxy measures were used for failure to flourish at secondary school. These encompass attainment, attendance, social adjustment, and attitudes. The adult variables covered aspects of well-being and mental health and some physical conditions and health behaviors. The WBL estimated the associations between failure to flourish at secondary school and health and well-being at age 33,

controlling for social, psychological, and economic factors up to the age of 7.

Those who flourished at school had better outcomes in all main aspects of well-being than those who did not flourish. The magnitudes of adjusted associations were substantial and apply to well-being, mental and physical health, and health behaviors.

Both attainment and engagement at secondary school were markers of adult health and well-being. Those with poor attainment but who were quite engaged at school had relatively poor levels of health and well-being in adulthood compared to cohort members who had attained well at school, but those with poor attainment and poor engagement had worse adult health and well-being than either group.

Literacy and numeracy

The National Research and Development Centre for Adult Literacy and Numeracy (NRDC) analyzed literacy and numeracy data from the 2004 survey of 9664 members of BCS70 (NRDC reports: New light on literacy and numeracy; Illuminating Disadvantage 2007).

Substantial differences in life chances, quality of life, and social inclusion were evident between individuals at or below entry level 2 in the English National Qualification Framework compared with others at higher levels of literacy and numeracy. Entry level 2 skills were associated with poor health prospects and lack of social and political participation. Gender differences were marked in some of these relationships including the tendency for men with poor skills to lead a solitary life without children in their mid-30s. In contrast, women with the same levels of skills were also more likely to be without a partner, but more typically were parents and often with large families.

At age 16, men and women with entry level skills were the most likely to be alienated from school and to have parents with low aspirations for them. 20% of women with entry level 2 literacy and 10% with entry level 2 numeracy had experienced a spell of homelessness compared with 6% women at level 1 or higher. Women with entry level 2 skills were more than twice as likely as women with level 1 or higher skills to have been a teenage mother (18% to 8%) and three times more likely to have four or more children by age 34 (11%–3%).

Self-efficacy and confidence

Hammond and Feinstein (LRE) investigated links between participation in adult learning and self-efficacy, particularly for adults with low levels of achievement at school. Analyses of data from NCDS, controlling for a range of features of the individual and their context up to the age of 33, found an association between taking courses and transformations from low to good levels of self-efficacy between ages 33 and 42 for all cohort

members. The association is greatest for those who had low achievement levels at school.

This correlational evidence does not prove that adult learning causes these positive changes; there remains the need to identify how far adults who are motivated to participate in adult education are already more likely to have higher levels of confidence and self-efficacy.

Family-Level Outcomes

Intergenerational Effects

The WBL reviewed the evidence on the role of parental education in child development (WBL Research Report, No. 10) and hypothesized that parental education is transmitted inter-generationally through six pathways:

1. by impacting on key distal factors such as income and poverty;
2. by moderating the effect of each distal factor, acting protectively and providing resilience in the family so that they can better deal with difficulties such as poverty;
3. by impacting on the characteristics of contexts, such as parents' cognitions or their mental health and well-being;
4. by supporting individuals and families in managing a set of characteristics and hence moderating their effects;
5. by impacting on proximal processes such as learning behaviors in the home; and
6. by moderating the effects of proximal processes.

The WBL found strong support for the view that education influences most of the factors that have been found to affect children's attainments. Besides having a direct influence on most of the characteristics and parent-child interactions, parental education can also moderate the effects of risk factors and ease the effect of them on interactions between parents and children.

Post-16 Participation and Benefits for the Next Generation

Although, there is considerable evidence to suggest that parenting is an important mediator, WBL research found that the association of educational participation and parenting skills and educational behaviors does not appear to be causal.

Using data from over 11 000 members of the 1958 British Cohort Study (WBL Research Report) the WBL estimated the causal effects of education on parenting skills. In the analysis that did not take account of the possible endogeneity of education, there was evidence of a clear gradient between educational background and elements of parenting. However, this relation between

education and parenting disappeared under a more robust causal instrumental variable specification. The WBL concluded that ability and positional ambition in society could be strong confounders of the relation between staying on in post-compulsory education and subsequent parenting skills.

WBL (Research Report) investigated the relationship between a mother's education and her parenting using data from the child supplement of the 1958 NCDS. By considering data across generations, the dataset allows for an estimation of the size of the bias in the relationship between education and parenting from failing to account for background characteristics, early cognitive development, and mother's own parenting experiences. Results indicate a confounding bias of 73% for cognitive stimulation and 89% for emotional support. This confounding bias is larger for females than for males.

The evidence on the effects of education on parenting skills and educational behaviors is insufficiently robust to problems of selection bias. It cannot be assumed that years of schooling is an appropriate measure for the formation of the identity capital skills that underlie parenting skills.

Community-Level Outcomes

At the community level, outcomes that indicate good functioning and well-being include community cohesion, low levels of crime and anti-social behavior, and trust and other aspects of social capital. A significant issue at the community level, not always apparent at lower levels of aggregation, is that social networks start to matter more explicitly in the determination of outcomes.

Individuals live and learn in multi-faceted and related contexts and these contexts interact. For example, family background interacts with schooling, and these interactions are important for the attainment and engagement of young people and the wider benefits that follow. Other contexts are also important, such as peer groups, childcare, and neighborhoods.

Crime

A US study (Lochner and Moretti) showed that a ten percentage point rise in the rate of high school graduation would cut the murder (arrest) rate by between 14% and 27%. A one percentage point increase in the graduation rate would lead to a reduction in crime of between 34 000 and 68 000 offences.

The WBL (Research Report No. 14) evaluated the impact on male juvenile burglary conviction rates of two UK government interventions, the reducing burglary initiative (RBI) and educational maintenance allowances (EMAs). The EMA program was piloted in some local education

authorities of England, creating a quasi-experimental setting. The RBI was introduced by the Home Office between 1999 and 2002. The aim of this initiative was to reduce burglary nationally by targeting areas with the worst domestic burglary problems. The WBL found that in areas where both initiatives were introduced convictions for 16- to 18-year-olds for burglary fell between 1.1 and 1.5 per 1000 relative to areas where neither program was introduced. This was also a much greater crime reduction than for areas that introduced the EMA or the RBI singly.

National-Level Benefits: Educational Inequality

At the national level, the benefits of learning are manifest as impacts on a wide range of outcomes, such as crime rates, health mortality and morbidity rates, levels of social cohesion, and engagement with public life.

Using international datasets the WBL (Research Report No. 7) explored the relationship between education and social cohesion. Education was found to be a powerful generator of social capital in some contexts, and the most significant predictor of individual propensity to trust, join, and engage in politics, even when controlling for other factors such as age, gender, and income. The report found that there is no significant relation between mean levels of education and societal cohesion. However, excluding the outliers, Norway and Germany, there is a negative and significant correlation of -0.765 between societal cohesion and education inequality. Creating a more cohesive society is likely to require policies which are designed to increase educational equality.

Final Thoughts

There is evidence of significant learning outcomes along all the socioemotional dimensions explored, including health, well-being, social cohesion, social capital, and citizenship. The best explanations situate outcomes in the context of the life-course, emphasizing the dynamic, interrelated and multi-level nature of context and process in relation to which outcomes materialize. The longitudinal aspect permits analysis of how learning outcomes are later built upon, neglected, or undermined. The dynamic aspect draws attention to the interactivity between contexts, whose causes and effects are shaped by factors variously proximate or distal, and which operate at many more levels than one.

We can only illustrate the many questions for further research: social and other types of capital theory promise further insight; there is scope for exploring further how far a model emphasizing self-productivity and complementarity (Heckman) supports or contradicts a model emphasizing context, process, and interactivity (Eccles

and the WBL). And the identification of learning outcomes often runs ahead of a secure explanation of their genesis, including the profile and direction of causality.

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Wellbeing

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Subjective Well-Being

Since it came into discussion in the early 1970s, the idea of subjective well-being (SWB) has been strongly promoted during the last 20 years as an individual and social value as well as a basic psychological need (Diener and Lucas, 2000; Strack *et al.*, 1991). As such, SWB is an indicator of a quality of life and is important for human health and development. The basic aims of well-being research are to identify harmful influences and to support those which foster good health, and to prevent illness. Nowadays, research on SWB is central to positive psychology aiming to build a good quality of life (Linley *et al.*, 2006).

Approaches to SWB

Different research traditions on well-being resulted in different definitions of SWB (e.g., Diener, 1984; Larsen and Diener, 1987; Veenhoven, 1991). There are three main lines of conceptualization of SWB, which can be classified as follows:

- SWB is a specific emotional quality of feeling well.
- SWB is a supra-term for positive emotions like enjoyment, pride, satisfaction, etc.
- SWB is a multidimensional concept combining cognitive and emotional factors.

Despite their differences, all three definitions agree on enjoyment or happiness as a core element of SWB.

As a psychological term, SWB usually refers to a subject's own feelings and evaluations. For example, if a person is happy or proud and evaluates his/her actual situation positively, he/she is expected to feel well; if a person feels sad or angry and evaluates his/her situation negatively, he/she will have a low level of well-being. Feelings and evaluations depend on a person's previous experiences, expectations, goals, and values, that is, his/her reasons for positive or negative emotions and evaluations may differ. SWB also consists of both mental and physical components, that is, a person's thoughts as well as body sensations have to be considered. Defined in this way, SWB differs significantly from single evaluations like satisfaction, or from singular emotions like enjoyment. According to the WHO definition of health, SWB can be classified into psychological, physical, or social forms of SWB (e.g., WHO, 2000).

Because of the coexistence of positive and negative events in life, emotions and evaluations can be negative as well as positive. Consequently, SWB can be defined by the interaction of positive and negative aspects: The more positively life in general or specific relevant domains of life are experienced, the better the well-being; negative feelings and negative evaluations of important circumstances or events in one's life result in a low level of well-being. Thus, to understand and explain a person's SWB, positive and negative dimensions have to be taken into account simultaneously. A high level of SWB occurs when there is a dominance of positive emotions and evaluations over negative emotions and evaluations. The greater the difference between the positive and negative dimensions, the higher the SWB.

SWB can develop in a short- or long-term perspective (Becker, 1994; Kim-Prieto *et al.*, 2005). Short-term SWB is the expression of current positive emotions and cognitions toward an actual situation, for example, working together with a classmate on a problem during the mathematics class. Thus, it is situationally determined. Long-term, habitual SWB is sustainable and indicates a more general evaluation of life situation and circumstances, for example, feeling well in school on the whole. Habitual SWB develops through frequent experiences of short-term well-being, that is, repeated experiences of enjoyment, mastering of academic challenges, feelings of competence in school, and a low amount of negative occurrences will lead to well-being in school. However, habitual SWB is not a simple or accurate aggregation of actual SWB. Specific experiences of actual SWB can contribute differently to habitual SWB, in that actual SWB in situations of special importance can have a stronger impact on well-being than situations of lower relevance.

In order to avoid theoretical confusion and to enable empirical precision, the following differentiation can be suggested:

- There are general characteristics of SWB such as its duration.
- Indicators of SWB are forms of expressions of SWB, for example, being relaxed.
- Components of SWB determine the elements of SWB such as enjoyment or the absence of worries.
- There are accompanying phenomena to SWB, like good mood.
- As long as their causal influence lacks empirical evidence, variables which show a significant relationship to

SWB (like academic degrees) should be described as correlates of SWB.

- Predictors, causes, or sources are responsible for the development of SWB as is also true for positive incidents. Nevertheless, predictors themselves can, to some degree, be influenced by SWB, for example, a person experiencing a high level of SWB is likely to perceive more positive events.
- Consequences of SWB are factors which are influenced by SWB, for example, information processing.

There are a lot of different quantitative and qualitative instruments for the assessment of SWB, ranging from affect-balance-scales to well-being questionnaires to event sampling methods and happiness interviews (Andrews and Robinson, 1991; Diener, 1984; Diener and Biswas-Diener, 2000; Lucas *et al.*, 1996). Of special importance for the accurate assessment of SWB is a multifaceted approach. Various dimensions of SWB, for example, the emotional and cognitive, the positive and the negative, have to be considered. Single items are not able to measure SWB in its full sense and multimethod assessments which explicitly integrate different perspectives on well-being are recommended.

Predictors of SWB

SWB proves to be sensitive to several factors. For this reason, it is also depicted as a multisource phenomenon. The more generally well-being is defined and measured, the more sources can influence it, from weather to situational circumstances to subjective beliefs (Diener, 1984). As a consequence, it is necessary to specify specific predictors for the different components of SWB. Although researchers so far were not successful in uncovering the most potent variables, social integration plays an essential role for SWB. More generally, there is empirical evidence about the impact of the following factors (Hascher, 2004):

1. First, SWB is influenced by personal circumstances. Situational factors such as an individual's financial status and social integration are important for a positive evaluation and contribute directly to subjective well-being. Other situational factors, such as an individual's socio-economical status, are intertwined with specific resources (e.g., social contacts) which influence the fulfillment of goals and aspirations and as a result SWB (e.g. Diener *et al.*, 1995).

2. Second, SWB can be predicted by personality factors. In addition to gender, the dependence of SWB on introversion versus extraversion (two facets of the so-called Big Five) has been confirmed (e.g., Vittersø and Nilsen, 2002). Extraverted individuals experience more positive situations in life and, thus, feel better than more

introverted persons (the so-called Bottom-Up Approach). They also interpret life more positively, react in a more positive way to life events and circumstances, and feel better than more introverted individuals (the so-called Top-Down Approach).

3. Third, subjective differences exist on how life-events are evaluated and interpreted. A person's evaluations are based on different points of references (e.g., Stein *et al.*, 1997). These are, for example, social comparisons, individual goals and expectancies, processes of adaptation to new life-circumstances, coping with challenging situations, control beliefs, or causal attributions.

Common to all three approaches is the subject-environment paradigm: there is no mono-causal relationship, but it is the interplay of the subjects (e.g., their goals, experiences, and attitudes) and the environment (e.g., living and working conditions) which determines SWB.

Well-Being in School

Principally, evaluations about SWB are relevant for a variety of contexts and different branches. For example, during the last years, psychologists paid special attention to comparisons of the SWB of nations (e.g., Biswas-Diener *et al.*, 2005). Till now, educational research concentrated mainly on cognitive aspects of school or on a few socio-emotional variables like test anxiety or school climate. As a result, studies on SWB of students or teachers are not yet common. Nevertheless, there are important findings which need to be taken into consideration for designing powerful learning environments in school. Some of them result from empirical studies which were initiated or conducted by health education research.

Student well-being

Despite a lack of research, SWB is a pedagogical aim in educational theory and practice. Although nowadays broadly accepted, it has also been a controversial topic (Boekaerts, 1993). Skeptical voices doubt the solely positive function of SWB and ask if student SWB could be harmful. They are afraid of neglecting the attainment of academic goals for the benefits of a positive atmosphere in school.

However, good reasons exist to foster SWB in school. Apart from the fact that SWB in school is a value in itself, there is empirical evidence that SWB affects students' learning processes and learning outcomes positively. Although SWB might not directly enhance student achievement, it is intertwined with various factors that contribute to effective learning and is an important criterion for a positive school climate which is necessary for students' learning – especially in highly structured, achievement-oriented, nonoptional learning contexts such as schools (e.g., Mayring and von Rhöneck, 2003).

Students who feel well in school can develop positive attitudes toward school learning and achievement. SWB can also serve as a resource for coping with negative peer influence or drug abuse. Furthermore, student SWB is a crucial indicator for children's and adolescents' health status and is a mirror of school quality.

Definition and research lines

There are various views as to how one could investigate student SWB. One important aspect is how student SWB is defined. Another differentiation stresses the question of whether SWB is an input or an output indicator of school quality. The different ways of operationalization can be described as follows:

1. Students are asked about aspects of their mood states, mostly negative states like depression (e.g., Benjet and Hernández-Guzmán, 2002; Undheim and Sund, 2005). Although SWB is not directly addressed, the analyses are subsumed under the term SWB. Sometimes direct correlations to school variables (e.g., school adjustment) are investigated. However, SWB itself is not investigated, neither in a general sense nor focused to the specific school situation.

2. Students are asked about their SWB by using a general well-being scale for children or adolescents (e.g., Jin and Moon, 2006; Konu *et al.*, 2002). These questions are directed toward life in general. Both dimensions of SWB, positive (like enjoyment) and negative (like worries), are addressed but the focus remains unspecified. Sometimes, additional instruments on school variables like satisfaction with school or school adjustment, which are related to general SWB are integrated. SWB itself is not yet directed to the specific school situation.

3. SWB in school is operationalized by a selective combination of various emotional, social, and cognitive school-related variables, for example, test anxiety, social integration into the classroom, and satisfaction in school (e.g., Eder, 1995). Nonetheless, there is no clear or explicit definition of SWB, rather an argumentation why the selected variables represent well-being.

4. Psychological well-being as a specific quality in the specific school setting is the central variable of research, described as student SWB, SWB of pupils or school SWB, or SWB in school (e.g., Engels *et al.*, 2002; Hascher, 2003, 2004, 2007). Until recently, only a few instruments existed but new ones are being developed and used and the results for student well-being, its correlates, and predictors are presented.

5. In terms of the WHO definition of health, student SWB is discussed under the broader perspective of health and health promotion (e.g., Konu and Lintonen, 2005, 2006). As school is an important context for children and adolescents, SWB in school is conceptualized as a crucial component of general physical and mental health.

So far, empirical studies of student SWB often used single items only, to ask them if they feel well in a learning situation, in a lesson, or in school in general. However, SWB in school as a psychological concept represents not a singular impression, but a more holistic quality of students' subjective experience in school with cognitive and emotional elements: student SWB in school is a quality of experience characterized by the dominance of positive feelings and cognitions toward school, persons in school, and the school context in comparison to negative feelings and cognitions toward school life. Well-being in school represents positive, emotional, and cognitive evaluations of school reality (Van Petegem *et al.*, 2006). It can be seen as an imbalance of positive and negative aspects in favor of positive aspects.

According to multidimensional concepts of general well-being, student SWB can be assumed to consist of a number of dimensions. Six dimensions prove to be crucial for student SWB (Grob *et al.*, 1996; Hascher, 2004; Ryff and Keyes, 1995):

1. positive attitudes and emotions toward school in general,
2. enjoyment in school,
3. positive academic self-concept,
4. absence of worries about school,
5. absence of physical complaints in school, and
6. absence of social problems in school.

How do students feel in school?

In asking this question one uncovers an amazing incongruity: researchers found that school is a highly aversive context and a central source of stress for some children and for many adolescents. When asked about daily experiences in school, students report a clear dominance of negative situations and emotions. Yet, most students indicate middle, some even high, score when asked about their SWB in school. One possible explanation for this discrepancy is that the results depend on the way students are asked about their school. To report about everyday events in school may lead to a focus on negative aspects because of their stronger need to be communicated. Conversely, a questionnaire on student SWB stresses negative as well as positive components, and thus, is able to take both sides of school into consideration simultaneously. Another explanation is given by the theoretical assumption that student SWB is more than simply lining up daily events. A more holistic view on school leads to different (i.e., more positive) results than a focus on singular experiences.

Independent of the method of measurement, the following interindividual differences in student SWB according to achievement, motivation, gender, and age have been empirically confirmed (e.g., Hascher, 2004, 2007; Konu and Lintonen, 2006):

- High achievers feel better in school than low achievers.
- Students with intrinsic motivation report higher SWB than those with extrinsic motivation.
- Girls report higher scores on SWB but are also likely to describe higher scores on negative components like physical complaints, in comparison to boys.
- Students attending lower classes feel better in school than students in higher grades. Toward the end of compulsory education an increase of SWB can be found.

Differences in student SWB cannot be exclusively attributed to individual characteristics. The following learning conditions in terms of school, instruction, and teaching subjects are of relevance as well (e.g., Opdenakker and van Damme, 2000; Van Petegem *et al.*, 2006):

- Schools differ in their level of student SWB indicating the relevance of school culture variables.
- Students report better SWB scores in schools with a higher academic ranking in comparison to schools with a lower academic ranking.
- Higher levels of SWB are reported in lessons with predominant student orientation in comparison to teacher-centered lessons.
- SWB differs across teaching subjects showing that highly selective subjects are more often associated with lower well-being than subjects with lower achievement pressure.

So far, the results refer to student SWB in general. A more detailed view on the various dimensions of SWB shows interesting differences (e.g., Hascher, 2004, 2007; Van Petegem *et al.*, 2007):

- Students report low degrees of physical complaints.
- Equally, the reported amount of social problems is small.
- More frequent are worries in school.
- A lack of enjoyment in school can be found.
- Students' test anxiety correlates negatively with all dimensions of SWB, even with social problems.

Predictors of student well-being

According to the predictors of general SWB, there are many sources of student SWB (see **Figure 1**). Basically,

the fit of individual goals, values, and expectancies with the school situation is crucial for the development of student SWB, that is, the better the fit, the higher the student SWB.

More systematically, predictors of SWB can be divided into three main groups:

1. Student SWB is influenced by conditions in the environment, primarily by school conditions. Not only dissimilarities of school forms but also school-specific variation in terms of action plans in school, school culture, pedagogical orientation, connections of needs and school characteristics, infrastructure, and facilities have an impact on student SWB. Situation-specific classroom factors like the quality of instruction, facilities, participation of all in the classroom, or the fulfillment of basic needs are of comparable importance. Teachers, as well as classmates, play an essential role for student SWB (Hascher, 2003; Van Petegem *et al.*, 2007): the higher the didactical and social competencies of the teachers, the higher the student SWB. In particular, the more positive their attitudes toward school, the higher their enjoyment in school and the better their academic self-concept. In comparison, the higher the achievement stress, the lower the student SWB, specifically, the higher their worries about school, the more frequent their physical complaints. Social discrimination in the classroom or rejection by peers reduces student SWB, that is, increases their social problems in school. Social support, integration into the classroom, and positive interactions during breaks foster student SWB by promoting positive attitudes toward school and students' academic self-concept, and by preventing social problems in the classroom. However, not only experiences in relationship to the school context but also living conditions, family structure, parental academic orientation, and school orientation of friends can influence student SWB (Martin, 2005).

2. Student SWB can be predicted to some degree by personality variables. In addition to gender, exertion readiness, self-efficacy and control beliefs, goal orientation or tolerance to frustration influence student

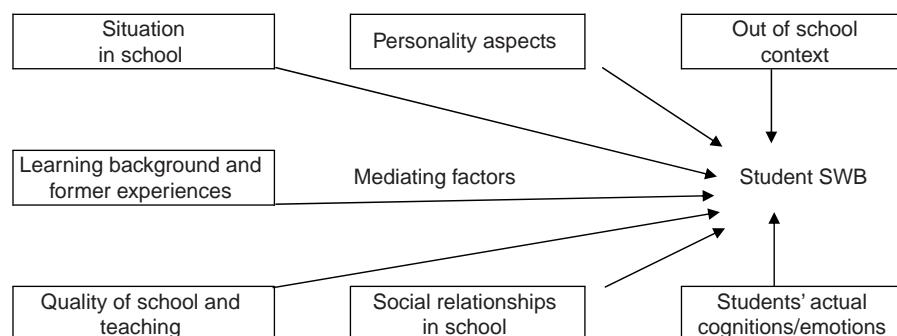


Figure 1 Predictors of student well-being. Hascher, T. (2004). Ein mehrperspektivisches Konzept der Quellen und Bedeutungen schulischen Wohlbefindens. In *Wohlbefinden in der Schule (Well-Being in School)*. Münster: Waxmann.

SWB. Gender differences are explained by a gender-specific quality of experiences in that females experience SWB more intensively. There is also a gender-specific way of reporting about emotional experiences, that is, females report about their SWB in a more open way. Exertion readiness, learning orientations, self-efficacy and control beliefs, and tolerance to frustration enable students to manage academic challenges which support success in school. As a consequence, success in school fosters student SWB.

3. Although context and personality variables can influence student SWB directly, most effects result from person–environment interaction. The interaction is represented by subjective differences to how school-related conditions and events are evaluated and interpreted. For instance, different evaluations result from social comparisons, processes of adaptation to the school situation, personal interests, coping with challenging situations, causal attributions, etc. These variables affect how school is perceived, how an individual's situation is related to the context, and they are powerful for students' self-evaluations. They can have a direct impact on student SWB or serve as mediators between school conditions, personality traits, and student SWB.

Teacher well-being

SWB as an indicator of the quality of life is not only important for students but also crucial for teachers' physical functioning and mental health. Till now, however, teacher SWB has not been directly addressed – neither from well-being research nor from research on teachers and teaching. Instead, concepts like life or job satisfaction, intrinsic motivation, flow and emotions at work, or the severe problems of burnout or stress at work are primarily studied as indicators of teacher SWB. Teacher SWB cannot yet be reduced to the existence of job satisfaction or the absence of stress. In future, it has to be studied as a distinct quality.

Job satisfaction is often considered as a valid indicator of SWB at work, although it is frequently defined as a cognitive job attitude, neglecting the emotional dimension of SWB. Moreover, research on job satisfaction shows discrepant results (Bieri, 2006). The majority of teachers are satisfied with their job. However, this is only a limited mirror of their job situation because job satisfaction predicts achievement, burnout, absenteeism, fluctuation, etc., less than what is expected. The clearest differences can be found between teachers experiencing high satisfaction and those experiencing lesser satisfaction: that is, high satisfaction is positively associated with health and negatively with thoughts about job quitting. Low satisfaction goes together with stress and unsuccessful coping strategies.

The subjectively experienced level of stress is high for many teachers despite their positive job satisfaction. Furthermore, the level of job satisfaction can vary between different areas: for example, teachers are highly satisfied with the content factors (e.g., work with children, instruction, and teaching) but dissatisfied with organizational factors (e.g., classroom size, amount of administrative tasks) and professional support. There are also significant differences in terms of school type, indicating high levels of job satisfaction for nursery and primary school teachers in comparison to secondary school teachers. It must also be noted that relevant sources of job satisfaction (e.g., interaction with students) can at the same time serve as causes for stress. As a result, a more differentiated approach to satisfaction in terms of the quality of experience and the evaluated subject is recommended. For example, different forms of satisfaction can be identified. Some of them result from a negative social comparison or a resigned view on one's own situation. Satisfaction can be experienced, if a person compares his/her situation with others who are in a much worse situation or if they accept the fact that their goals cannot be reached. Thus, individual goals and aspiration levels are crucial variables for the development of job satisfaction.

According to research on general SWB, similar predictors for teacher SWB can be assumed. They can be divided into context factors, personality, and their interplay. Regarding context factors, the workplace is the main context and predictor of SWB. The specific conditions of working in schools and their subjective perception by teachers need to be taken into account, for example, high autonomy of teachers, high responsibility for students' learning outcomes, relatively low support of colleagues, a continuous process of educational top-down reforms, high achievement pressure caused by the curriculum and by school evaluation, the challenging task of handling disruptive student behavior, and so on. Furthermore, a discrimination of intrinsic factors like contribution to children's education and development, and extrinsic factors like salary and social status is helpful.

As a consequence, resources at work are of specific importance (Salanova *et al.*, 2006). Two forms of resources and their interaction can be differentiated: personal resources (e.g., self-efficacy beliefs) and organizational resources (e.g., autonomy and social support at work). Research on personal resources confirms that high levels of self-efficacy beliefs can foster job satisfaction and SWB at work. Similarly, organizational resources have an impact on job satisfaction. Yet, there is no mono-causal relationship; reversed causal relationships are also found, that is, job satisfaction has an influence on future personal and organizational resources.

See also: Affect, Mood and Emotions; Cognition and Emotion.

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Empathy

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Glossary

Attunement – Actively listening to, observing, and focusing on another to resonate with their thoughts and feelings.

Empathy – An act of heartfelt, thoughtful imagination to help determine another's cognitive and affective experience.

Intersubjective experience – Engaging with the internal and expressed thoughts and feelings of others.

Intrasubjective experience – Engaging with one's own internal thoughts and feelings through reflection.

Mirroring – The affirmation of one's feelings and thoughts by another through their words, facial gestures, tone of voice, or other expressive features.

thoughts and feelings and those of others to whom they relate and influence.

Intrasubjective engagements are the thoughts and feelings which come into play as we try to make sense of experience. For example, understanding ambivalent reactions to a situation, or discerning in order to make an important decision are processes which touch on internalized prior experiences. Since we are all influenced in our psychic development by significant others in life, such as parents, siblings, teachers, and friends, our internalized thoughts and their emotional aura continue to influence present thoughts, feelings, and responses.

Empathic intelligence posits that in educators and those involved in interpersonal and intrapersonal work, particular desirable behaviors, such as attunement, warmth, sensitivity, and capacity for mirroring, can have positive effects on those with whom they engage. Importantly, educators' empathic disposition needs to be matched with other abilities, such as a capacity to engage, an ability to create a dynamic between thinking and feeling, coupled with professional expertise, enthusiasm, and intelligent caring. While empathic intelligence is particularly apt for those involved in teaching, training, and educating, it is equally applicable for those involved in a range of professions engaged in relationships and learning. Education is conceptualized here to include formal and informal teaching and learning in public and private settings across all age ranges. In learning contexts and organizations, which function within a climate of empathic intelligence, participants' tacit abilities to learn and relate effectively can be mobilized.

Some background to the development of empathy is outlined here, but the focus of this article is on empathy and empathic intelligence in teaching and learning. Theorization of the concept of empathy has been influenced by work in disciplines such as philosophy (Buber, 1965; Greene, 1995; Kohlberg, 1978; Noddings, 1984, 1988, 1992; Nussbaum, 1995, 1997; Polanyi, 1959, 1969, 1974, 1983; Verducci, 2000), biology (Darwin, 1965), psychology (Barnes and Thagard, 1997; Barnett, 1987; Bruner, 1972, 1986, 1990; Csikszentmihalyi, 1990; Eisenberg and Strayer, 1996; Feshbach and Feshbach, 1987; Freud, 1922; Gardner, 1983, 1993, 1997; Goleman, 1995; Isen, 1984; Kincheloe *et al.*, 1999; Mayer and Salovey, 1997; Piaget, 1926, 1981; Wadsworth, 1989; Vygotsky, 1978), psychoanalysis (Kohut, 1959, 1971, 1979, 1982, 1985; Winnicott, 1965), and infant studies (Lichtenberg, 1983, 1984; O'Connor and McCartney, 2007; Repacholi and Meltzoff, 2007; Stern, 1985; Trevarthen, 1977, 1979). The relevance of empathy to learning has only recently surfaced in

Introduction

For a long time, effective educators and others have known tacitly that the relationships and contexts within which humans learn are significant to the quality of that learning. It is timely to elaborate the nature of such aspects, particularly, but not exclusively, as they relate to school learning. Mindful that much significant learning of language and socialization occurs before children enter formal education, the nature of infant learning is relevant to understand early influences on attitudes to learning and self as a learner. In early childhood, affective and inter-/intrasubjective templates are formed which influence learning readiness and interpersonal responsiveness (O'Connor and McCartney, 2007; Repacholi and Meltzoff, 2007; Stern, 1985; Winnicott, 1965).

Empathy through inter-/intrarelatedness, developed as empathic intelligence (Arnold, 2005), is a useful frame for reflecting how social and emotional experiences can affect pedagogy. In the pedagogical framework of this article, empathy is theorized as a function of mind, brain, and feeling within contexts of care and relatedness. By creating a dynamic between thinking and feeling in a climate perceived as caring by students, teachers can mobilize learners' intrasubjective experiences in the service of learning. Similarly, understanding the nature of empathy and how quality relationships can influence learning intensifies educators' attunement to their own

education though it has been foreshadowed in liberal, democratic, student-centered educational practice, influenced by Dewey (1916, 1963, 1971). The brain-based research of Damasio (1994, 2000, 2003), LeDoux (1992), and Williams (2001) offers important insights into the complexity of cognitive/affective interplays in the mind, signaling that learning is not primarily a cognitive task but very much influenced by social and emotional aspects.

Historical Antecedents

Research on the nature of empathy (Barnett, 1987; Barnes and Thagard, 1997; Davis, 1994; Duan and Hill, 1996; Ekman, 2003; Eisenberg, 1989; Eisenberg and Strayer, 1996; Kohut, 1971, 1982, 1985; Verducci, 2000) serves to highlight some of its conceptual complexity. Some salient features of the concept will be highlighted, particularly as they relate to education as an outcome of interpersonal relatedness.

Apart from a reference in Aristotle's *Rhetoric* to 'émpathiea', as Verducci (2000a) points out, empathy first appears in nineteenth-century German esthetics in the work of Friedrich Vischer (1847–1933), and following them, Martin Buber and Theodore Lipps. Friedrich Vischer called empathy as a process of 'symbolic interjection of emotions into objective forms', such as engaged in by viewers of works of art. Verducci (2000: 67) notes that Vischer's son Robert named the process *Einfühlung*, which was later translated as empathy. Robert Vischer described the process as projecting one's own life into the lifeless form, "only ostensibly do I keep my own identity... I am mysteriously transformed into this Other" (Friedrich Vischer 1994: 19–20). The philosopher Martin Buber (1965) describes the experience of feeling strong connectedness with subjects or objects,

To glide with one's own feeling into the dynamic structure of an object... to 'transpose' oneself over there and in there. Thus it means the exclusion of one's own concreteness, the extinguishing of the actual situation of life, the absorption in pure aestheticism of the reality in which one participates (Buber, 1965: 97).

Although Buber's description of empathy here is far removed from the concept of empathy in human relatedness, it does describe a capacity for imagination for decentering and opening up to and trusting experience which is part of empathic responsiveness.

Lipps (1851–1914) went further than the Vischers and Buber, saying "empathy is the fact here established, that the object is myself and by the very same token this self of mine is the object. . . the antithesis between myself and the object disappears, or rather does not yet exist" (Verducci, 2000: 68). He saw the phenomenon of empathy as projective, imaginative, and primarily affective. Verducci (2000: 67) notes that in these early ideas of empathy,

"The seed of this process lies in the imagination, the flower in the viewer's affective life. The imagined mental representation of an object and the viewer's feelings become inseparable." In these rudimentary views of empathy, concentration and the capacity for absorption are also functioning. What is not identified is a capacity for cognitive distancing or awareness of a self engaging in the experience, arguably, necessary predispositions for those engaged in educating others. The experience as described by these philosophers is esthetically pleasing though no judgment or cognition is identified in the process. Nor is empathy associated with unpleasant feeling such as disgust or rage which can be mobilized, along with other unpleasant feelings such as shame and distress, in an empathic response to the events witnessed. As Verducci (2000) notes "empathy as sole grounding for the aesthetic experience cannot account for the phenomenon of aesthetic judgment" (Verducci, 2000: 69), signaling the cognitive aspect present in some empathic experiences.

Empathy in Psychoanalytic Literature

It is surprising that Freud had little explicitly to say about empathy, apart from acknowledging that it "plays the largest part in our understanding of what is inherently foreign to our ego in other people" (Freud, 1922: 69–144). Here Freud seems to be suggesting empathy as an ability to recognize what and which we perceive in others to be different from ourselves. Earlier followers of Freud such as Theodor Reik and Robert Fliess regarded empathy as essentially a cognitive process of identifying the feelings of their therapy patients, while attempting to maintain an emotionally distanced therapeutic relationship with them. Little is reported about patients' responses to what might well seem like dissonant engagements where therapists encourage patients to express or disclose their emotions, while rigorously suppress their own.

In common parlance, empathy means being able to imagine, often intuitively, how the other thinks and feels. Heinz Kohut (1959) described empathy as "vicarious introspection". As a more complex process than identification, vicarious introspection includes both affective attunement and the cognitive capacity to judge best how to respond insightfully and feelingly to the other's psychic state. Kohut argued that empathy should be examined and evaluated 'in an empirical context as a mental activity' (Kohut, 1982: 397). He differentiated two levels of empathy, one an "information-gathering activity" and the other "a powerful bond between people" (Kohut, 1982: 397). This differentiation is a useful precursor to the development of empathy as both a cognitive and an affective process, capable of both developing and reflecting relatedness and understanding. Kohut argues that the presence of empathy is beneficial both in a clinical setting and in human life,

as it “suggests an explanation for certain observable contents and/or sequences of events in man’s (*sic*) psychic life” (Kohut, 1982: 397). Most importantly, the self-soothing and empathic responses of parents and others, promotes the development of a nuclear self into a mature, cohesive self (Kohut, 1971). In psychotherapeutic terms, the task of being empathically responsive is complex. Guided by empathic attunement, the therapist’s capacity for introspection and sensitivity to the state of the therapeutic alliance functions to soothe the client’s feeling state (if he/she is responsive to the therapist’s mood), and to stimulate awareness of masked feelings, in the expectation that understanding and even insight can be developed. Kohut warned, “empathy is used non-intuitively, ploddingly, if you wish, by trial and error. I did not write about empathy as being always correct and accurate” (Kohut, 1982: 396). Arguably, it is not the accuracy, or otherwise, of the empathic response which is necessarily therapeutic as much as the therapist’s perceptible wish to be attuned and responsive which cues patients’ feelings of positive self-regard. Similarly, children with positive attachment experiences with caretakers, particularly mothers, are likely to enter preschool and formal schooling, and are able to develop positive relationships with responsive teachers and peers.

Empathy and Infancy

A number of infant studies (Lichtenberg, 1981, 1983; Stern, 1977; Trevarthan, 1979, 1980) support the view that infants are programmed to seek engagement with others and with their environment. These studies focus attention on the infant’s development of a subjective self. The work of Daniel Stern (1985) on the role of empathy in infancy illuminates the importance of empathic attunement in early learning, emotional development, and socialization. Stern writes about the development of “the domain of inter-subjective relatedness” (Stern, 1985: 27), that ability to experience one’s self as a separate being from others, but as a dependent being too whose sense of self can shift according to others’ responsiveness or otherwise.

Stern theorizes that in dyadic engagements between infant and mother in which the mother’s empathic responsiveness (or otherwise) amplifies, soothes, validates (or deadens) the infant’s affect states, there develop what Stern theorizes as representations of interactions that have been generalized (RIGs), (Stern, 1985: 99). These might be thought of as psychically coded emotional experiences which provide the infant with a unified sense of a core self and awareness of a core other: “The existential bedrock of interpersonal relations” (Stern, 1985: 125). The degree to which the major affect states (interest, joy, surprise, anger, distress, fear, contempt, disgust, and shame) are mirrored back to the child by the mother and other caretakers influences how they are encoded psychically.

Thus codified, they become available as emotional templates influencing responsiveness to events experienced as similar by the child. These social and emotional templates can be reinforced, modulated, and nuanced throughout life, depending upon one’s ability to be self aware and deeply reflective. Emotional response to a stimulus can range from the mild pleasure of cursory attention to the intense pleasure of deep absorption in it, or flow (Csikszentmihalyi, 1990). Angry feelings can range from mild irritation to intense rage or fury, shame can be experienced as mildly embarrassing or searingly humiliating, distress can be momentarily discomforting or completely terrifying.

Stern’s point is that in early childhood and beyond, the way others reflect back or mirror the child’s emotional states, affects the internalization and elaboration of those states. The infant’s initial pleasure in throwing food on the floor is modulated by the caretaker’s response to that behavior, hence relatedness and emotional responsiveness influence learning. Stern’s concept of RIGS is helpful in explaining how early experiences influence children’s attitudes and predispositions to learn. The child for whom learning language, listening to stories, and exploring through play is associated with pleasurable relationships and emotions is likely to be predisposed to learning. Long before children enter school, they have developed feelings about learning and themselves as learners, modulated by their sense of relatedness with those modeling behaviors and attitudes. This is evidenced in the experimental work of Repacholi and Meltzoff (2007) who demonstrated that infants’ actions were influenced by their memory of the affect of adults’ behavior. Furthermore, “the infants’ actions varied as a function of whether they were currently in the Emoter’s visual field” (Repacholi and Meltzoff, 2007: 503). The researchers concluded that infants “learn from emotional eavesdropping and their subsequent behaviour depends on the Emoter’s orientations toward them” (Repacholi and Meltzoff, 2007: 503). By 12 months of age, infants can use emotional cues such as tone of voice and facial expression to regulate their own actions (see Feinman *et al.*, 1992, cited in Repacholi and Meltzoff, 2007: 50 for a review of the literature on infant social referencing).

Teachers and schooling can amplify or dampen feelings of expectation, joy, anxiety, or dread around learning experiences. Empathic teachers can attune to these feelings and relate with their students in constructive and emotionally engaging ways. While students may not necessarily articulate the qualities of effective teachers in complex ways, they will experience them in felt ways depending upon the teachers’ emotional sophistication and attunement to their needs. How do we know this? As research into infant social referencing indicates that infants in their early stage know how to read emotional cues and can use such cues to modify their behavior. Repacholi and Meltzoff’s (2007) study provides important

insights into what might be called as infants' capacities to learn in social contexts through affective experiences. O'Connor and McCartney's (2007) study of 1364 children from birth to sixth grade found positive associations between quality of teacher-child relationships and achievements. In addition, they found that high-quality teacher-child relationships buffered children from the negative effects on achievement of insecure or other maternal attachment issues. Secure attachments "are marked by high levels of maternal sensitivity and child trust in maternal availability and support" (O'Connor and McCartney, 2007: 343). The effect of quality teacher-child relationships on achievement was mediated through child and teacher behaviors in the classroom.

Several studies show that children develop attachment relationships with teachers which are associated with their long-term achievement (Birch and Ladd, 1997; Pianta, 1994; Pianta and Nimetz, 1991). Peer relationships also influence achievement (Azmitia and Montgomery, 1993; Birch and Ladd, 1996; Ladd *et al.*, 1999). As O'Connor and McCartney (2007) concluded from their study:

Educating teachers as to how to develop high-quality relationships with children may provide strategies for teachers working with children who are at risk of lower levels of achievement. . . .Informing teachers as to the influence of relationship quality on classroom behavior may increase teacher awareness and in turn prevent children with low quality relationships from engaging in harmful behaviors in the classroom. (O'Connor and McCartney, 2007: 364)

Narratives and Empathy

Maxine Greene argues passionately and persuasively for the role of imagination in education. She says,

One of the reasons I have come to concentrate on imagination as a means through which we can assemble a coherent world is that imagination is what, above all, makes empathy possible. It is what enables us to cross the empty spaces between ourselves and those we teachers have called "other" over the years. . . of all cognitive capacities, imagination is the one that permits us to give credence to alternative realities. (Greene, 1995: 3)

Narratives offer particular social and emotional experiences which can promote empathic development. Martha Nussbaum (1997) argues that three capacities, above all, are essential for the cultivation of humanity in today's world:

First is the capacity for critical examination of oneself and one's traditions-for living what, following Socrates, we may call "the examined life". . . (Second) Citizens who cultivate their humanity need. . . an ability to see themselves not simply as citizens of some local region or group

but also, and above all, as human beings bound to all other human beings by ties of recognition and concern. . . . The third ability of the citizen, closely related to the other two, can be called the narrative imagination. This means the ability to think what it might be like to be in the shoes of a person different from oneself, to be an intelligent reader of that person's story, and to understand the emotions and wishes and desires that someone so placed might have. (Nussbaum, 1997: 9-11)

Nussbaum (1997: p. 14) says empathy means "learning how to be a human being capable of love and imagination." Further, she argues that when a child and a parent learn to tell stories together, sharing a sense of wonder, the child is acquiring essential moral capacities ". . . stories interact with (children's) own attempts to explain the world and their own actions in it. A child deprived of stories is deprived, as well, of certain ways of viewing other people. For the insides of people, like the insides of stars, are not open to view" (Nussbaum, 1997: p. 89). "The habits of wonder promoted by storytelling thus define the other person as spacious and deep, with qualitative differences from oneself and hidden places worthy of respect" (Nussbaum, 1997: 90).

Narratives (and metaphors/symbolic experiences) can function to develop empathic attunement and perspective taking. Some stories draw us back into the past; others project us into the future. Some illuminate the day; others take us into the darkness of human behavior. The best storytellers lighten and enlighten the paradoxes and ambiguities of life. In narratives, the past and present exist in a seemingly timeless realm in which human characters confront physical challenges, emotional and moral dilemmas in some form, and tacitly suggest to us, as readers, how we might best choose to conduct our lives.

Empathic Intelligence

Empathy is defined here as an ability to understand the thoughts and feelings of self and others. It is a sophisticated ability involving attunement to one's own thoughts and feelings, a capacity to decenter and distinguish between projection and introjection and a capacity for deep introspection. It is, fundamentally, an act of thoughtful, heartfelt imagination whereby understanding of the other is provisional and nonintrusive. Empathy seeks to understand rather than to judge.

Empathic intelligence is more complex than empathy itself but necessarily includes it. Empathic intelligence theorizes how an empathic disposition and associated qualities of enthusiasm, expertise, and capacity for engagement can be enacted in the effective practice of pedagogy. Empathic intelligence articulates aspects of intersubjective and intrasubjective phenomena of pedagogy.

Empathic intelligence is a sustained system of psychic, cognitive, affective, social, and ethical functioning derived from:

- an ability to differentiate self-states from others' states ("who owns what in the interaction");
- an ability to engage in reflective and analogic processing to understand and mobilize a dynamic between thinking and feeling in self and others;
- attunement to the potential integration (or disintegration) of experiences created through that dynamic (recognizing whether learning occurs or not);
- an ability to use mirroring and modeling to good effect; and
- a commitment to the care, well-being, and development of self and others.

In various combinations and with different strengths according to context, these qualities inform the enactment of empathic intelligence. Since these social, emotional, and personal qualities are complex and often subtle in their manifestations, they can be evidenced often in the enthusiasm, capacity to engage, expertise, and empathy of teachers. In a sense, these four qualities provide a short-hand way of thinking about empathic intelligence and recognizing it in professional practice.

It is helpful to conceptualize empathic intelligence as manifest in five behaviors: enthusiasm, expertise, capacity to engage, intelligent caring, and empathy itself. While all these behaviors, and the values and attitudes consistent with them, can help to identify an empathically intelligent educator, it is important to consider them as having some distinctive qualities but sharing in common an informing belief that they function in the service of the other, albeit they can also provide important substance to the professional well-being of their adherents. This is because they are inherently intra/intersubjective behaviors which function in the interpersonal domain of experience and thrive upon mirroring, rigorous self reflection and sensitivity to dynamics.

Enthusiasm

Enthusiasm reflects a sense of inner spiritedness. In a pedagogical context, it can convey pleasure in the act of teaching and influencing, along with pleasure in engaging with students. Such spiritedness can have a positive effect on students, provided it is modeled sensitively and not overwhelmingly. It signals commitment, a sense of purpose and belief in the worth of the persons and enterprise of teaching and learning, which can be emotionally affirming for students and help to engage their attention.

Enthusiasm is easy to recognize in this highly expressive form where the enthusiast is demonstrative physically, and perhaps vocally. In a more subtle form, it can manifest itself

also in quiet concentration upon a task or purpose, or even in a centeredness which can be as captivating to observe as its more demonstrative forms.

Engagement

The skill of engaging others can depend on all kinds of personality factors and even the use or abuse of power and status factors. In this model of empathic intelligence, engagement depends on the ability to create within the other, a justifiable belief in the worth of paying attention to the one seeking the engagement. Experienced writers know the importance of engaging readers in the first couple of paragraphs of a book, mindful that readers are not particularly forgiving or enthralled with writers who fail to draw them into the web of language early on. Surprise, a tone of authority, a description of an interesting time, place, or character, or similar strategies, can work well to keep the reader believing there is something for them in the pages which follow. Similarly, the engaging educator needs to be sophisticated in choosing from a repertoire of strategies, those likely to keep the audience believing in the worth of the engagement. It certainly helps if that expectation of worth in the engagement is honored and fulfilled. Not only does it satisfy the audience, it also provides the engager with positive feedback about the strategies selected, and indeed, about the worth of the enterprise.

Expertise

In teaching and learning, expertise requires a range of educative abilities and qualities (Berliner, 1994, 2002; Bucci, 2003; Hattie, 2003) but particular ones are highlighted here as they relate to empathic intelligence. In the model of empathic intelligence, the expert can mobilize students' imagination and encourage them to look at experience from a number of perspectives in order to hypothesize about cause and effect.

The expert educator is theoretically informed about professional practices and discipline content. This includes understanding child development and the nature of learning. Such educators understand that learning occurs in complex ways and progress is not always straightforward or easily discernible. An expert educator has an expansive repertoire of professional practices, tested and modified through reflection on practice. The expert educator can model best practices and can tolerate own and others' mistakes.

Intelligent Caring

Intelligent caring can identify the right balance between dependency and independence. It offers the other close

attention and sustained engagement, providing an awareness of possible outcomes. It positions the welfare of the other at the heart of the engagement but seeks to mobilize the other's psychic energy, thought, and feeling in constructive ways (Arnold, 2005: 57). It establishes reasonable boundaries to promote autonomy. The function of care in moral development has been extensively theorized (Hoffman, 2000; Noddings, 1984, 1988, 1992).

Empathy and Brain-Based Research

The work of Antonio Damasio (1994, 2000, 2003) provides strong support for the argument here that empathetic intelligent teaching mobilizes a dynamic between thought and feeling, recognizing the complementarity of thought and feeling in intellectual and personal development. He argues that human consciousness is actually consciousness of the feeling and experiencing of self.

"Contrary to traditional scientific opinion, feelings are just as cognitive as other percepts" (Damasio, 1994: p. xvii). "(Emotion and feeling) provide the bridge between rational and nonrational processes, between cortical and subcortical structures" (Damasio, 1994: p. 128).

Laboratory work on brain-based research shows that emotion is integral to the processes of reasoning and decision making. As Damasio says,

The neurological evidence simply suggests that selective absence of emotion is a problem. Well-targeted and well-deployed emotion seems to be a support system without which the edifice of reason cannot operate properly... These (results) also made it possible to view emotion as an embodiment of the logic of survival. (Damasio, 2000: 42)

Damasio (1994) illustrates the story of one of his patients, Elliot, whose brain damage affected his normal ability to generate response options to social situation and to consider spontaneously the consequences of particular options. Damasio remarks that when treating Elliott,

I began to think that the cold-bloodedness of Elliot's reasoning prevented him from assigning different values to different options, and made his decision-making landscape hopelessly flat. (Damasio, 1994: 51)

I found myself suffering more when listening to Elliot's stories than Elliot himself seemed to be suffering. In fact, I felt I suffered more than he did just by thinking of those stories. (Damasio, 1994: 44)

Damasio's own philosophical and ethical commitment to both understanding and enhancing the lives of his patients, even those whose mental functioning is very minimal, reflects a professional functioning applicable widely in professional practice. His willingness to engage in a sensitive and feeling way to his patients provided a source of significant scientific insights.

Furthermore, he embodies the capacity to create and to understand a dynamic between thinking and feeling, in a climate of care. The care is characterized as intelligent caring for the well-being of the patient and for the realization of the truth of the situation. It suggests that the phenomena of each individual experience are created uniquely in each particular context. As he remarks,

Were it not for the possibility of sensing body states that are inherently ordained to be painful or pleasurable, there would be no suffering or bliss, no longing or mercy, no tragedy or glory in the human condition...Feelings form the base for what humans have described for millennia as the human soul or spirit. (Damasio, 1994: xvii–xviii)

Steven Rose, a practicing scientist working at the forefront of medical research, provides a similar perspective. He describes his experience of discovering that his feelings interfered with his game of chess, a game which he previously believed involved purely cognitive and logical skills (Rose, 1993: 36). From his scientific work and his reflections upon his own learning experiences, he argues that cognition cannot be divorced from affect, try as one might (Rose, 1993: 36). He continues,

The problems that it (the link between affect and cognition) illuminates are fundamental to my research strategy, just as much as their resolution. However, even today I find myself frequently in danger of forgetting that lesson, though it ought to be fundamental to a strategy for living. (Rose, 1993: 36)

Howard Gardner, arguing for a more complex view of intelligence than commonly prevailed, remarked:

The roots of a sense of self lie in the individual's exploration of his (*sic*) own feelings and in his emerging ability to view his (*sic*) own feelings and experiences in terms of the interpretative schemes and symbol systems provided by the culture. (Gardner, 1983: 294)

Many educators work tacitly in sympathy with these neurological insights but it is affirming and encouraging to professional practice to understand why certain processes are effective. Learning is equally an affective, cognitive, imaginative, and empathetic enterprise, and teaching practices need to reflect that. It is important to recognize that it is within the intersubjective and intrasubjective experience of imagined worlds that feeling and reason can psychically engage, deepening one's sense of self and consciousness of others. The empathically intelligent teacher harnesses social and emotional experiences in the service of students' learning.

See also: Affect, Mood and Emotions; Emotion in Educational Contexts; Flow in Education; Motivating Students in Classrooms; Social and Emotional Outcomes of Learning.

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Anxiety

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Glossary

Cognitive-focused interventions – Emphasize the mediating role of cognitive processes in sustaining or eliminating test anxiety and refer to a wide array of therapeutic approaches directed toward modifying the worry and irrational thought patterns of test-anxious clients.

Emotionality – Consists of perceptions of autonomic reactions evoked by evaluative stress.

Emotion-focused interventions – Primarily aim at reducing the arousal and heightened emotional reactions of test-anxious persons when faced with stressful evaluative situations.

Situation-specific personality trait – In the context of test anxiety research, this trait refers to the individual's disposition to react with extensive worry, intrusive thoughts, mental disorganization, tension, and physiological arousal when exposed to evaluative situations.

Test anxiety – Refers to the set of phenomenological, physiological, and behavioral responses that accompany concern about possible negative consequences or loss of competence on an examination or similar evaluative situation.

Test-anxious behavior is typically evoked when a person believes that his/her intellectual, motivational, and social capabilities are taxed or exceeded by demands stemming from the test situation.

Worry – Primarily refers to cognitive concern about the consequences of failure.

typically required to adjust to a variety of novel and challenging academic and social stressors and demands that may evoke anxiety. These include demanding coursework assignments; heavy workload; time pressures in meeting deadlines for submission of papers; insufficient finances and work opportunities; demanding examinations administered under stringent time pressures; poor student-faculty rapport; inadequate and crowded study conditions; and conflict between meeting academic demands, leisure, and extracurricular pursuits, and family responsibilities. The anxiety experienced by many students as a result of school or academic stress is such an unpleasant and painful experience that it is not surprising that anxiety often interferes with student learning, well-being, and health.

Anxiety is a universal human experience, intrinsic to the human condition. The construct is defined by a loosely coupled ensemble of cognitive, affective, somatic arousal, and behavioral tendency components, evoked in response to mental representations of future threat or danger in the environment (Zeidner, 2007). However, the nature of the specific environmental stimuli evoking anxiety appears to have changed considerably over the years (Zeidner, 1998). Whereas in ancient times, wild beasts, natural catastrophes, and the like plausibly served as major sources of environmental stress, in the modern achievement-oriented society, stress and anxiety are evoked largely by a wide array of social-evaluative encounters (e.g., appearing for a college aptitude test, defending a dissertation, and taking a vocational aptitude test battery).

Modern conceptualizations view anxiety as an important adaptation that signals to us what is potentially harmful, dangerous, or threatening in a stressful encounter, with critical value for human survival (Rachman, 2004). Thus, anxiety in educational contexts serves as a call for action, taking precedence before all other activities and shifting attention to the sensed threats and potential losses and dangers at hand. When an individual experiences anxiety this is important information suggesting that something in the environment has been appraised as threatening or harmful to one's well-being and some action needs to be taken to ward off the threat (Lazarus, 1999).

Anxiety is frequently cited as a key villain in the ongoing drama surrounding educational testing and evaluation, and is claimed to be among the factors at play in determining a wide array of unfavorable outcomes and contingencies (e.g., poor cognitive performance, scholastic underachievement, low satisfaction with school or college, and psychological distress and ill health; Zeidner, 1998).

Overview

Anxiety is incontestably the most researched of all emotional states in education (Schutz and Pekrun, 2007). Educational settings are contexts in which students at all levels are ubiquitously exposed to a wide array of potentially stressful and anxiety-evoking experiences. Thus, school-aged students are frequently exposed to stressors such as parental pressures for high achievement, fierce classroom competition for high grades, experiences of frustration and failure, teacher disapproval, peer conflict, social isolation and rejection, and physical and verbal aggression and abuse. Comparably, college students are

Clearly, many students have the potential to do well but perform poorly because of their debilitating levels of anxiety, thus limiting educational or vocational development. The loss to society of the full contribution of potentially capable students through anxiety-related distress and somatic ailments, underachievement and failure at school, or performance decrements constitutes an important problem for educational practitioners.

Conceptualizations

In contrast to early mechanistic views of anxiety as a unified construct, it is currently construed as a complex multidimensional construct embodying a series of interrelated cognitive, affective, and behavioral tendency components and reactions. Its complex nature, coupled with the fact that anxiety encompasses worry and self-preoccupation, physical upset, disruptive feelings, and maladaptive behaviors, makes it particularly difficult for educational researchers to sort out all these components. Anxiety has been variously conceptualized as an antecedent stimulus condition, a latent mediating process (e.g., as a probability of a harmful future outcome), and a response (physiological, affective, behavioral, etc.) to a stressful condition.

Since the early 1950s, the anxiety construct was dramatically advanced by a number of important conceptual distinctions, which helped refine thinking and research in the area. One useful distinction differentiates between anxiety as a relatively stable personality trait and as a more transitory state reaction to specific ego-threatening situations (Spielberger, 1972). Thus, trait anxiety refers to relatively stable individual differences in anxiety proneness, whereas state anxiety is a palpable, temporary reaction to a stressful event (e.g., final examinations) characterized by subjective feelings of tension, apprehension, nervousness, and worry, as well as by the activation or arousal of the nervous system. Whether or not students who differ in trait anxiety will show corresponding differences in state anxiety in the school or college setting depends on the extent to which each of them perceives a specific situation (e.g., college algebra examination) as psychologically threatening, and this is influenced, in turn, by each individual's constitution (e.g., numerical ability) and past experiences (e.g., number of mathematics courses taken).

Another important conceptual and methodological contribution to the evaluative anxiety literature is the distinction between facilitating and debilitating anxiety (Alpert and Haber, 1960). Accordingly, facilitating and debilitating anxiety, respectively, are claimed to lead to task-related and task-irrelevant behaviors during evaluative ego-threatening situations. A particularly useful conceptual distinction differentiates between worry and emotionality components of anxiety (Liebert and Morris,

1967). Worry, the cognitive component of anxiety, was viewed primarily as a cognitive concern about the consequences of failure on evaluative tasks (e.g., college aptitude examinations). By contrast, emotionality, the affective component of anxiety, was construed as perceptions of autonomic reactions evoked by stress. These two components are empirically distinct, though correlated, and worry relates more strongly to performance decrements than does emotionality.

Lazarus's transactional theory of stress and coping (Lazarus and Folkman, 1984; Lazarus, 1991) provides a contemporary and fundamental conceptual framework for the analysis of stress and anxiety in educational settings. According to this perspective, emotions, such as anxiety, reveals something of a person's goal hierarchy and belief system and how events in the immediate environment are appraised by the person. Thus, any evoked emotion reflects a high-level synthesis of several appraisals relating to the individual's adaptational status in the current environment. The core theme in anxiety is a danger or threat to ego or self-esteem, especially when a person is facing an uncertain, existential threat. Thus, the very presence of anxiety in an evaluative encounter is informative because it communicates that an existential threat has not been controlled very well, thus providing the researcher and educational specialists (counselors, school psychologists, etc.) with critical diagnostic information.

Evaluative Anxiety

A host of different types of anxiety may be relevant to specific educational settings (test anxiety, math anxiety, computer anxiety, social anxiety, etc.). These forms of anxiety are frequently encountered in education and share the prospect of personal evaluation in real or imagined social situations, particularly when a person perceives a low likelihood of obtaining satisfactory evaluations from others (Leitenberg, 1990). Next, we discuss two prevalent forms of evaluative anxiety in education – test and math/computer anxiety.

Test Anxiety

Test anxiety refers to the set of phenomenological, physiological, and behavioral responses that accompany concern about possible negative consequences or poor performance on an examination or a similar evaluative situation (Zeidner, 1998). Test-anxious behavior is typically evoked when a student believes that his/her intellectual, motivational, and social capabilities are taxed or exceeded by demands stemming from the test situation.

Test anxiety has taken on a variety of different meanings throughout its relatively brief history as a scientific construct. In the early days of research, the construct was

defined in motivational terms, either as drive level, goal interruption, or a need to avoid failure. Subsequently, it was conceptualized as a relatively stable personality disposition linked to cognitive–attentional phenomena. Accordingly, the highly anxious person is one who attends excessively to evaluative cues concerning personal competence, and to feelings of physiological arousal. Test anxiety may also be a concomitant of self-handicapping employed to preserve ones self-merit in the face of potential failure (Zeidner and Matthews, 2005). Cybernetic self-regulative models have seen test anxiety as resulting from a conflict between competing reference values (Zeidner, 2007).

Recent theorizing (Zeidner, 1998) emphasizes the distinction between test anxiety as an attribute of the person and as a dynamic process. From the first perspective, dispositional test anxiety may be construed as a contextualized personality trait. Accordingly, test anxiety refers to the individual's disposition to react with extensive worry, intrusive thoughts, mental disorganization, tension, and physiological arousal when exposed to evaluative contexts or situations. The more transient-state expressions of anxiety may be assessed separately from the more stable trait. From the second, process-oriented perspective, test anxiety depends on the reciprocal interaction of a number of distinct elements at play in the ongoing stressful encounter between a person and certain parameters of an evaluative situation. These elements include the specific educational context, individual differences in vulnerability (trait anxiety), threat perceptions, appraisals and reappraisals, state anxiety, coping patterns, and adaptive outcomes.

Math and Computer Anxieties

Both math and computer anxieties, respectively, are conceptually related to test anxiety through a common theme of concerns about evaluation (e.g., Rosen and Maguire, 1990). Math anxiety is defined by feelings of tension, helplessness, mental disorganization, and associated bodily symptoms that are evoked in mathematical problem-solving situations (Ashcraft, 2002). Math anxiety is claimed to interfere with the manipulation of numbers and the solving of complex mathematical problems in a wide variety of ordinary life and academic situations. Statistics anxiety, referring to the feeling of anxiety encountered when taking a statistics course or working on statistical analysis, has frequently been construed as a subset of math anxiety (Zeidner, 1991). Math anxiety, coupled with objective cognitive difficulties experienced in learning mathematics, may lead people to reject goals, such as scientific career choices, for which studying mathematics is instrumental.

Computer anxiety (sometimes termed computer phobia, technophobia, or cyberphobia) may be decomposed into anxiety about present or future interactions with computers or computer-related technologies; specific

negative cognitions or self-critical internal dialogs when interacting with the computer or when contemplating future computer interaction; and negative global attitudes about computers, their operation, or their societal impact (Weil *et al.*, 1990). The effects of computer anxiety on the utilization of computer-based technology may incur serious economic costs estimated at the level of billions of dollars per year (Bozionelos, 2001).

Math and computer anxieties may relate not just to the obvious stimulus attributes of mathematics/numbers and computers, but also to deeper personal concerns. Thus, math anxiety focuses not only on the evaluative nature of mathematics tests, but also concerns mathematical content (symbols, operators, etc.), its distinctive features as an intellectual activity (inductive and deductive reasoning, problem solving, etc.), and its meanings for many persons in our society (Richardson and Woolfolk, 1980). Similarly, computer anxiety is evoked by the consideration of the broader implications of computer use for perception of the self, society, and culture. Computer-anxious persons may also suffer from a more generalized technophobia, which itself is evident before adulthood (Weil *et al.*, 1990).

Similar to the state-trait distinction for test anxiety, trait math anxiety reflects relatively stable individual differences in the tendency to perceive situations involving the manipulation of numbers and the use of mathematical concepts and data as threatening or harmful. Persons high in trait math anxiety respond to these situations with elevations in state anxiety, involving both heightened emotion and interfering worry responses (Anton and Klisch, 1995). State math anxiety refers to elevations in worry, apprehension, and arousal in a situation involving mathematical content or reasoning. Likewise, in contrast to the dispositional nature of trait computer anxiety, state computer anxiety is aroused by specific objects (personal computer, scanner, printer, etc.) or situations (computer error). Individuals high in trait computer anxiety are especially vulnerable to state anxiety responses (Gaudron and Vignoli, 2002).

All forms of evaluative anxiety are quite common, with prevalence estimates in adults ranging from 20 to 50% for math and computer anxieties (e.g., Bozionelos, 2001). Experiencing various forms of evaluative anxiety in educational settings is a near-universal phenomenon across people differing in age, gender, and culture. Thus, meta-analyses of test anxiety data from various national sites show that although mean test anxiety levels vary to a certain extent across cultures, test anxiety is a prevalent and relatively homogenous cross-cultural phenomena. Furthermore, women tend to report higher levels of evaluative anxiety (test, math, and social) than men; however, the gender difference often does not translate into objective performance differences. In addition, as discussed below, evaluation anxiety has frequently been linked to performance decrements in educational settings.

Table 1 Tentative typology of test-anxious students

Type	Brief description
I. Students deficient in study and test-taking skills	Characterized by a major deficiency in study and test-taking skills. Their poor examination performance results from deficits that include problems in acquisition (encoding), organization/rehearsal (study skills), and retrieval/application during a test.
II. Students experiencing anxiety blockage and retrieval problems.	These students have efficient study skills but suffer from anxiety blockage, consequently encountering problems in retrieving information during the examination. These anxious students study effectively, but cannot handle the stresses and pressures of evaluative situations.
III. Failure-accepting students	Failure-accepting students are characterized by a personal history of repeated test failures. They come to accept low ability as the primary explanation of their failures. As a consequence, they become accepting of failure, exhibiting apathy, resignation, and a sense of defeat, not unlike reactions traditionally associated with learned helplessness.
IV. Failure-avoiding students	Failure-avoiding students are driven to achieve primarily as a means of protecting themselves against beliefs that they lack ability. For these students, effort is truly a double-edged sword. They may strive for success through meticulous preparation; yet, failure despite high efforts increases the probability that one's ability will be considered low, thus inducing anxiety reactions.
V. Self-handicappers	These students avoid diagnostic information about intellectual tasks by reducing effort or avoiding the test situation. Accordingly, if a low score is obtained, the self-handicapping student can rely on the debilitating effects of anxiety as an excuse to escape responsibility for actions, thus reducing otherwise burdensome expectations others hold for that person.
VI. Perfectionistic overstrivers	These overstriving perfectionists are characterized by high personal standards of academic success, perception of high or even exaggerated expectations, perceived doubt regarding the quality of academic performance, and a need for order and organization in their academic work. No effort is ever sufficient as the perfectionistic examinee seeks approval and acceptance and tries to avoid errors and failure through an endless cycle of self-defeating overstriving.

Discussions of evaluative anxiety in the literature are commonly guilty of a uniformity myth, conveying the impression that evaluative anxiety is a rather homogeneous category. In the domain of test anxiety research, Zeidner (1998) has sketched some distinct, yet potentially overlapping categories, of subjects with test anxiety (see Table 1). In fact, as this tentative typology of test-anxious students demonstrates, test anxiety has a variety of sources and, similarly, its behavioral consequences vary with contextual and personal factors.

Measurement and Assessment

We now briefly discuss a number of issues in anxiety assessment, focusing on subjective self-reports, which are by far the most popular observational procedure for mapping out the phenomenology of anxiety in educational settings.

Subjective Self-Report Measures

Subjective reports include any direct report by the person regarding his/her own anxiety experience and responses in a particular setting (learning mathematical operations, using new computer programs, taking examinations, engaging in social interactions, etc.). These assessments typically employ single-item rating scales (e.g., "Please indicate how anxious you were speaking before the entire

class, employing the following 7 point rating scale: 1 = not at all anxious, 7 = extremely anxious"); multi-item questionnaires (e.g., Spielberger's 20-item Test Anxiety Inventory, 1980); or oral interviews before, during, or after an important stressful event in the educational context.

Self-report instruments are now popular because they are considered to provide the most direct access to a person's subjective experiences in ego-threatening situations, possess good psychometric properties, are relatively inexpensive to produce, and are simple to administer and score (Zeidner, 1998). Self-report paper-and-pencil questionnaire measures of state anxiety ask individuals to report which of the relevant symptoms of anxiety they are currently experiencing in a particular situation, whereas trait measures ask subjects to report symptoms they typically or generally experience in a particular class of situations (e.g., public speaking, classroom examination, social interaction, and sports competition). Unfortunately, many studies use self-report data exclusively, without any attempt to measure salient behavior (e.g., through observational procedures), thus either under- or overestimating anxiety levels.

Rather fortunately, most popular anxiety inventories have satisfactory reliability coefficients, typically in the high 0.80s to low 0.90s. Among the factors influencing reliability are test length, test-retest interval, variability of scores, and variation within the test situation. However, at present, we have no infallible or perfectly objective criterion against which to validate anxiety scores. Scores

Table 2 Some alternative measures for assessing anxiety

Type of assessment	Examples
Physiological measures	Accretion levels of corticosteroids, adrenaline products, sugar, cholesterol, and free fatty acids.
Performance measures	Examination scores, semester grade point averages, and latency and errors in recall of stress-relevant stimulus materials.
Systematic observations of specific behaviors	Perspiration, excessive body movement, hand wringing, fidgety trunk movements, and inappropriate laughter when subjects were engaged in examination situations.
Trace measures	Amount of chewed traces on the pencil or ruler, sweat smudges on examination papers, and personal diaries.
Think-aloud procedures	Relating thoughts and emotions following or during stressful experience (e.g., "Please list as many thoughts and feelings as you can recall having during this algebra examination").

on ability tests, grade point average, observer ratings, behavior in structured evaluative situations, and the like have been employed as measures of criterion behaviors. A number of alternative measures of anxiety appear in Table 2.

Anxiety and Cognitive Performance

Scores of studies have investigated the complex pattern of the relations between anxiety and different kinds of performance. Various forms of evaluative anxiety (test, mathematics, computer, statistics, etc.) have been found to interfere with competence both in laboratory settings as well as in true-to-life test situations in school or collegiate settings. Processing deficits that relate to test anxiety, including general impairments of attention and working memory, together with more subtle performance changes, such as failure to organize semantic information effectively.

Hembree's (1998) meta-analytic study, based on 562 North American studies, demonstrated that test anxiety correlated negatively, though modestly, with a wide array of conventional measures of school achievement and ability at both high school and college levels. Data collected on students from upper elementary school level through high school show that test anxiety scores were significantly related to grades in various subjects, although the correlation was typically about -0.2. Cognitive measures (i.e., aptitude and achievement measures combined) correlated more strongly with the worry than the emotionality component of test anxiety. Higher effect sizes were reported for low-rather than high-ability students and for tasks perceived as difficult rather than those perceived as being easy. Another meta-analysis reported by Ackerman and Heggestad (1997) showed a mean correlation of -0.33 between test anxiety and general intelligence test performance. Test anxiety was also correlated in the -0.20 to -0.30 range with other broad intellectual abilities including fluid and crystallized intelligence, learning and memory, visual perception, and mathematics ability.

There is a large literature on anxiety as a predictor of information processing in laboratory studies. The information-processing components sensitive to anxiety relate to input (encoding and acquisition of information), central processing (e.g., memory, language processing, conceptual organization, judgment, and decision-making), and output (e.g., information retrieval, response selection, and execution). These anxiety-related deficits, at various stages of processing, suggest some general impairment in attention and/or working memory. These various performance deficits are often attributed to high levels of worry and cognitive interference.

Both cognitive interference and cognitive bias appear to be pervasive in evaluative anxiety, influencing various stages of information processing (Eysenck, 1992). Anxiety often leads to scanning of the environment for threat (generating distractibility and attentional impairment), followed by focusing of attention on sources of threat (generating attentional bias). In addition, competence deficits may also be a consequence of poor skill acquisition. For example, deleterious effects of test anxiety may reflect not just cognitive interference, but also deficits in study habits and test-taking skills.

Behavioral avoidance generated in part by performance-avoidance goals plays a key role in the maintenance of evaluative anxiety and concomitant skill degradation. Evaluative anxiety leads to procrastination, motivated by fear of failure in learning specific subject matter or the aversiveness of the test situation or material. Procrastination, such as failure to complete homework assignments or study for the test, leads to failure to acquire the knowledge required. In turn, this lack of preparation leads to poor performance and anxiety in the test situation (Naveh-Benjamin, 1991), increasing subsequent test anxiety and avoidance of study.

Studies also identify moderator variables that accentuate or reduce deficits in performance. For example, negative feedback appears to be especially detrimental to anxious students, whereas providing reassurance and social support may eliminate the deficit. However, there have been sufficient instances of nonconfirmation of predicted deficits to suggest that high anxiety does not

automatically generate lower achievement outcomes. Generally, anxiety is more detrimental to attentionally demanding tasks, and may even facilitate performance on easy tasks. There may also be more subtle effects related to the qualitative nature of the task.

Interventions

A bewildering array of anxiety-treatment programs has been developed and evaluated over the past three decades. Current attempts to reduce debilitating levels of anxiety and enhance scholastic performance have typically focused either on treatments directed toward the emotional (affective) or cognitive (worry) facets of evaluative anxiety.

The emotionally oriented therapies primarily aim at reducing the arousal and heightened emotional reactions of anxious persons when faced with stressful evaluative situations. Based on the assumption that anxiety comprises a physiological component, attempts to alleviate anxiety symptoms should prove successful, in part, if they focus on reducing levels of arousal or on altering ways in which people appraise their arousal in evaluative situations.

In general, these emotion-focused treatments rely on key behavioral learning principles (counterconditioning, reciprocal inhibition, extinction, observational and coping skill learning, etc.) They also draw from an arsenal of behavioral techniques, such as deep muscle relaxation, guided imagery, and graduated hierarchies. For example, relaxation and guided imagery are not unique to a particular behavioral intervention method, but are employed in several methods, including relaxation as self-control, systematic desensitization, and anxiety management training. Procedures designed to reduce emotionality, while clearly useful in modifying subjectively experienced anxiety, by these methods, appear to have little effect on cognitive performance. Overall, emotion-focused treatments appear to be relatively ineffective in reducing evaluative anxiety unless these treatments contain cognitive elements.

Recent years have witnessed a proliferation of cognitively oriented intervention programs that emphasize the mediating role of cognitive processes in sustaining or eliminating anxiety. Cognitive therapy is a generic term that refers to a wide array of therapeutic approaches directed toward modifying the worry and irrational thought patterns of anxious clients. Broadly speaking, cognitively oriented approaches to anxiety intervention are quite similar in assuming that cognitive processes are determining factors in anxiety, although they differ in terms of actual intervention procedures. A fundamental assumption shared by contemporary cognitive models of test anxiety is that cognitive processes mediate the person's emotional and behavioral responses to stressful evaluative situations. It follows that to modify the negative emotional reactions of anxious clients to evaluative

situations, therapy needs to be directed at reshaping the faulty premises, assumptions, and negative attitudes underlying maladaptive cognitions of anxious subjects. A brief summary of key emotion-focused, cognitive-focused, and skill-focused treatment techniques and methods, and their reported effectiveness, is presented in Table 3.

The choice of which therapy to use will be influenced not only by the diagnosis of the specific nature of the client's problem and type of test anxiety, but also by the broader diagnostic picture, the immediate and long-term goals of treatment, and the therapeutic orientation adopted. For example: although relaxation may not increase the performance of test-anxious students with study-skill deficits, it may be prescribed by the school psychologist in order to help the student achieve the immediate goal of achieving control over test anxiety – as a first step toward academic problem solving. Thus, once the anxiety that interferes with learning new study skills is removed, the following step would be training the student in efficient study skills. Furthermore, there are different ways that a therapist may view his/her students' problem (distorted thinking styles, poor problem-solving skills, etc.) In addition, each of these views may give rise to different treatment procedures.

Summary and Conclusions

Anxiety is one of the most ubiquitous and researched emotions in education. Anxiety is a multifaceted construct, involving cognitive, affective, and behavioral components. Although different forms of anxiety discussed above are distinguished by the antecedent conditions and contexts evoking the anxiety (e.g., tests, and mathematics/computers), they have important structural similarities (worry and arousal) and are governed by similar cognitive and motivational processes (apprehension of being evaluated and fear of not meeting standards).

The nature of the anxiety–performance relationship is best viewed as reciprocal in nature. Thus, high levels of anxiety, accompanied by elevated levels of worry and cognitive interference, absorb part of the capacity needed for attention, working memory, problem solving, or other cognitive processes required for successful completion of a task. Evaluative anxiety also produces certain aversive patterns of motivation, coping, and task strategies that interfere with learning and performance. The result is that competence and self-efficacy suffers, thus leading to further anxiety over time and generating a vicious circle of increasing anxiety and degrading competence.

Overall, the assessment of anxiety in educational settings has not kept pace with the theoretical advances in conceptualizing the construct. Thus, much of the construct domain (e.g., task-irrelevant thinking, off-task thoughts, and poor academic self-concept) is underrepresented in current measures of anxiety. Stressful situations

Table 3 Some focal emotion-focused and cognitive-focused anxiety intervention techniques

<i>Treatment</i>	<i>Description</i>	<i>Effectiveness</i>
<i>I. Emotion-focused interventions</i>		
Biofeedback	Use of instrumentation (e.g., a physiograph) to provide a person with immediate and continuous information about one or more physiological processes (e.g., skin conductance, temperature, heart rate, blood volume pulse, respiration, and electromyograph). Biofeedback teaches highly test-anxious persons to monitor and modify the physiological processes associated with their emotional reactions.	A large body of literature supports the notion of increased physiological control when using physiological feedback and self-regulation. However, biofeedback alone is not effective in reducing anxiety (nor does the addition of biofeedback training improve the efficacy of other forms of treatment). Given the potential cost and inconvenience of using biofeedback training, it may not be the treatment of choice for anxiety intervention.
Relaxation training	Recommended on the premise that maintaining a relaxed state, via deep breathing and muscle relaxation exercises, would counteract a person's aroused state. Presumably, if a person knows when and how to apply relaxation, it will be applied directly as a counterresponse to anxiety.	Meta-analytic research tends to support the effectiveness of relaxation therapy. However, the effects on performance tend to be negligible.
Systematic desensitization	Situation-specific anxiety is viewed as a classically conditioned emotional reaction resulting from a person's aversive experiences in aversive situations. Systematic desensitization proposes that anxiety reactions to threatening situations may also be unlearned through specific counter-conditioning procedures. The anxious client is typically trained in a deep muscle relaxation procedure and, while relaxed, instructed to visualize an ordered series of increasingly stressful scenes (an anxiety hierarchy). The client imaginably proceeds up the hierarchy until he/she is able to visualize the most stressful scenes on the list without experiencing anxiety. Through repeated pairings of imaginal representations of threatening evaluative situations with deep relaxation, the bond between the threatening evaluative scenes and anxiety is expected to be weakened.	Meta-analytic data lend support to the effectiveness of systematic desensitization in reducing anxiety, particularly test anxiety, in school children and college students. It is shown to be as, if not more, effective in reducing test anxiety than a variety of other treatments, including relaxation training, hypnosis, and skills training. However, systematic desensitization fares less well when cognitive performance (e.g., academic achievement) is the criterion or when outcome is being assessed.
Anxiety management	Teaches highly anxious subjects to recognize their situation-specific related arousal responses as they are building, and then to use them as cues for initiating the coping response of relaxation in threatening situations.	A body of research supports the effectiveness of this technique in reducing anxiety. Thus, anxiety management training appears to be as, if not more, robust and effective than related interventions. Reductions in debilitating anxiety were maintained for follow-up periods ranging several weeks to months.
Modeling	Involves the live or symbolic (e.g., through videotape) demonstration of desired coping behaviors in a stressful situation such that they can be subsequently imitated by the anxious person. It is assumed that exposure to models displaying adaptive behavior may play a positive role in facilitating performance. Clients are instructed to vividly imagine the stressful evaluative scene and focus on the anxiety and associated response-produced cues (e.g., racing heart, neck and shoulder tensing, dryness of the mouth, and catastrophic thoughts). Clients are then trained to use these cues to prompt adaptive coping skills to actively relax away tension, and reduce anxiety before it mounts too severely.	A body of research lends support to the effectiveness of modeling in treating anxiety. In particular, exposure to models who are task oriented and provide attention-directing cognitive structuring clues is beneficial to the performance of anxious persons. Of additional benefit is evidence in the behavior of the model that he/she is successfully coping with the worry and tension associated with anxiety.

II. Cognitive-focused interventions

Cognitive-attentional training	<p>Cognitive attentional training provides specific training in the redirection of attention to task-focused thinking and emphasizes the inhibition of task-irrelevant thinking and nonproductive worry. The cognitive attentional approach relates performance decrements to the diversion of attention to self-focused thinking, coupled with the cognitive overload caused by the worry component of anxiety. By redirecting attention to the task and reducing worry and task-irrelevant thinking, cognitive resources are freed and, when redirected to the task, performance is improved. Attentional training programs traditionally provide clients with instructions to attend fully to the task and to inhibit self-relevant thinking while working on a variety of academic tasks.</p>	<p>The beneficial effects of attentional instruction on the anxiety and cognitive performance of highly anxious students is supported by some empirical research. Task instructions that provide examinees with information about appropriate problem-solving strategies, and away from self-preoccupied worry, may be particularly helpful to the anxious individual's cognitive functioning.</p>
Cognitive restructuring	<p>The rationale is that anxious persons will be able to master their anxiety by learning to control task-irrelevant cognitions that generate their anxiety and direct attention from their task-directed performance. The two most prominent cognitive therapeutic methods in test anxiety intervention are Rational Emotive Therapy and Systematic Rational Restructuring. Both forms of treatments are based on the premise that anxiety or emotional disturbance is a result of illogical or irrational thinking. Two key irrational beliefs that maintain anxiety are that one must succeed at all costs, and that success is equivalent to self-worth. Anxious individuals are taught how to recognize, vigorously challenge, question, and dispute their irrational beliefs, and replace their maladaptive internal dialog with more rational structures and beliefs. Presumably, by modifying irrational beliefs and schemas, negative emotional reactions will be reduced, and performance improved. Systematic Rational Restructuring aims at helping test-anxious clients to discover the worrisome task-irrelevant thoughts they entertain, to eclipse such thoughts, and to substitute positive self-statements that redirect their attention to the task at hand.</p>	<p>Research indicates that whereas cognitive restructuring reduces anxiety, there is no concomitant improvement in performance. A number of studies provide evidence showing that these techniques may be effective in reducing anxiety. However, concomitant improvements in cognitive performance are observed with far less consistency.</p>
Cognitive Behavioral Modification	<p>A multifaceted program merging both cognitively-focused and emotionally focused techniques (as well as skill training in many cases), thus offering the test-anxious client the best of many worlds, so to speak. This multimodal treatment attempts to deal with the multiple manifestations of anxiety, including negative motivational or affective tendencies, irrational thought patterns, and skills deficits, and emphasizes the application, and transferring of acquired coping skills to <i>in vivo</i> test situations. Given its dual emphasis on modifying both emotional processes and irrational thoughts and cognitions, this results in a powerful approach that merges emotionally oriented and cognitively oriented techniques to alleviate clients' anxiety and enhance their performance. This procedure is based on the premise that reducing a person's level of anxiety involves both anxiety-reduction training as well as detailed cognitive restructuring of certain faulty beliefs or misconceptions.</p>	<p>Multimodal treatment packages, such as cognitive-behavior modification, are most likely to be effective by their support for the inclusion of multiple domains related to anxiety. These procedures are relatively effective in reducing self-reported levels of debilitating anxiety, and are equally effective, more or less, in reducing both cognitive and affective components of anxiety. These procedures increase test performance, on average, by about half a standard deviation in school-aged samples, and elevate grade point average by close to three-quarters of a standard deviation.</p>

would typically have effects on various response systems (i.e., verbal, physiological, and cognitive performance), and each measurement method possesses unique functions in anxiety assessment and is characterized by specific and unique limitations. It is desirable to obtain measures from a number of systems and triangulate any observed effects by means of converging operations.

Evaluative anxiety is more than a combination of physiological arousal, negative self-preoccupation, deficit in stress-related coping skills, and poor study habits. It is the complex interaction among these diverse components that seems to define anxiety. As the cognitive, affective, and behavioral components of anxiety interweave in contributing to the problem of evaluative anxiety and its treatment, it is predicted that an induced change in one system would generally be followed by a change in the other. Therapeutic approaches, which emphasize cognition, often extend to the emotional life too, and vice versa. For example, it is likely that emotion-focused training (e.g., progressive relaxation) may make the client less anxious and result in a decrease in anxiety-focused, task-irrelevant ideation. Similarly, some forms of cognitive therapy may provide anxious subjects with an increased sense of perceived control, which might spill over into the emotional domain and result in lower emotional arousal in an evaluative situation.

Anxiety assessments need to be understood within the context of a student's life and social milieu. Thus, understanding the results of a score on an anxiety measure requires an appreciation of the possible multiple and interactional influences on anxiety. These includes the subject's past affective and academic history, and current social, emotional, vocational, and economic adjustments, as well as behavior during the examination. When a life history (no reported math anxiety in the past) is in disagreement with the results of a math anxiety scale, it is best to pause before making a diagnosis or decision on the basis of the anxiety scale alone, as the former is generally a more reliable criterion.

It is now readily apparent that interventions should be based on a careful theoretical analysis of the nature of evaluative anxiety and its key components and manifestations. Traditionally; however, interventions have mainly evolved from interest in specific behavioral treatment techniques rather than from an analysis of the nature and effects of anxiety. Indeed, most investigators who have applied behavioral methodology to the reduction of evaluative anxiety have generally paid little attention to relating the treatment process to important theoretical conceptions. The current diversity of treatments, while supplying the clinician with a rich variety of treatment

options to choose from in rendering services, also reflects a state of uncertainty marked by the lack of consensus regarding the most effective method for treating anxiety in educational settings.

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Impact of Assessment on Students' Test Anxiety

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Introduction

The assessment of student learning can be seen as an essential component of evaluating the effectiveness of learning in an organization. Identifying factors influencing student learning and performance is a major goal for teachers and educational researchers. Test anxiety is a major predictor of academic performance and various studies have demonstrated that it has a detrimental effect (Zeidner, 1998). Test anxiety can be defined as a student's reaction to testing or evaluating situations. However, testing and assessment does not only have an impact on test anxiety, but also influences motivation to learn and further performance. The potential impact seems to differ from how and by whom the assessment is done, in which way it affects the educational career, and also how it is perceived by the person assessed.

The effects of test anxiety on performance have first been explained by the Yerkes–Dodson law. Other explanations follow the interference and learning-deficit models. The interference model focuses on the mediating role of negative thoughts on the anxiety–performance linkage. According to the learning-deficit model, the student with high test anxiety tends to use inadequate learning skills while in the preparation stage of test taking. Due to their theoretical underpinnings, however, all these models look at anxiety in an individualistic manner. In order to get a more comprehensive understanding of the impact of assessment on student's test anxiety we introduce the conservation of resources (COR) theory (Hobfoll, 1998) which does not only stress individuals' perceptions but also takes environmental contingencies into account. COR theory makes it possible to look at both, teachers and students simultaneously and combines the aspects of psychosocial well-being of teachers and students with different categories of assessment.

Foremost, the effects of test anxiety on performance have been depicted as a curve (see **Figure 1**) by Yerkes and Dodson (1908). The Yerkes–Dodson curve shows that up to a threshold anxiety is related to increased performance. Conversely, performance efficiency decreases if anxiety is still at an ever-increasing rate. Up to the summit of the curve, anxiety can be adaptive because it motivates students, helps to prepare for a test, and improve their functioning. Beyond the optimal level, the peak, anxiety is considered maladaptive as it causes distress and impairs functioning. In general, high test anxiety is more closely associated with

lowered performance in low-ability students than in their high-ability counterparts (Hembree, 1988).

Two key components of test anxiety are cognition and emotion. Liebert and Morris (1967) suggested that test anxiety was composed of worry and emotionality. Worry was conceptually identified as cognitive expression of concern about one's own performance, while emotionality referred to autonomic reactions which tend to occur under examination stress as stated by Liebert and Morris. Negative effects of test anxiety on academic performance have been explained by two models: the interference model (Sarason, 1986) and the learning-deficit model (Naveh-Benjamin *et al.*, 1987). According to the interference model, anxious students are distracted due to worrying and task-irrelevant cognitions and the learning-deficit model proposes that it is students' ineffective study habits during preparation for a test that leads to anxiety and less performance on the test.

These stated aspects demand for answers and possible resultant actions. Assessment models and evaluative situations have to be modified allowing for successful learning, coping strategies, and better performance. In general, education has to rethink assessment procedures and integrate alternative assessment approaches such as portfolios, project assessment, or other classroom-assessment techniques which focus on students' resources rather than on their deficits in order to diminish feelings of test anxiety. Therefore, broader resource-oriented theories are required to get a more comprehensive understanding of the impact of assessment on student's test anxiety. First, we would like to introduce the COR theory as such an inclusive framework, and second, provide an overview about alternative assessment methods.

Stress, Anxiety, and Student Learning in the Framework of the Conservation of Resources Model

Students facing the challenge of coping with upcoming tests and assessment situations is a common phenomenon. Students seem to be more vulnerable at examination times, and adaptive coping with assessment is important for their achievement and psychological well-being (Zeidner, 1998). The role of stress, anxiety, and coping in an assessment situation has been investigated by a number of researchers. They mainly focused on the cognitively based

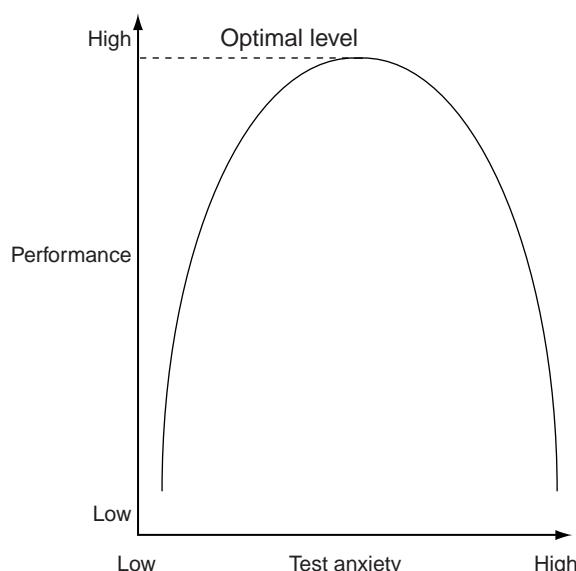


Figure 1 Effects of test anxiety on performance.

transactional stress concept of Folkman and Lazarus (1985) viewing emotions as arising from the individuals' perceptions of imbalance between individual resources and environmental demands. By highlighting perceptions when defining stress and coping capacity, primarily, the importance of individual difference factors are stressed and only secondary emphasis is placed on environmental contingencies. Hobfoll *et al.* (1998) developed the COR theory in response to the need to incorporate more fully both the objective and perceived environment into the process of coping with stress.

Theoretical Concepts of Conservation of Resources Theory

COR theory (Hobfoll, 1998) offers a comprehensive framework for understanding the impact of assessment on emotions and performance by focusing on the resources of individuals and groups (Buchwald, 2003). First, we outline the theoretical principles of COR theory and give more detailed examples of the application of COR theory to educational assessment settings on the individual and group level. Finally, we discuss future directions for integrating COR theory into best-practice models to enhance students' learning development.

According to COR theory, human beings' primary motivation is to build, protect, and foster their resource pools in order to protect the self and the social bonds that support the self. The theory provides a model for preventing resource loss, maintaining existing resources, and gaining resources necessary for engaging in appropriate behaviors. COR theory argues that resources are the key components

to determining individuals' appraisals of events as stressful and resources define how individuals are able to cope with stressful situations. As a result of the strong association to broader life conditions, COR theory (see **Figure 2**) can augment our understanding of stress and coping, particularly in complex learning situations in which students have differential access to resources.

Further, COR theory proposes that those already lacking in resources will be more vulnerable to the experience of loss spirals and those with plenty of resources will have more opportunity for resource gain. Loss spirals, as Hobfoll (1998) explains, occur when resources are expended, and are therefore not available to cope with future-loss threats, thus potentially leading to further loss. Initial loss leaves individuals, groups, and communities more vulnerable to the negative impact of ongoing resource challenges. Those endowed with greater resources will be more resilient, but ongoing resource loss will challenge even richly resource-endowed individuals or groups. Thus, loss spirals are a powerful force that is evident in individuals and communities already lacking resources.

As **Figure 2** shows, the processes of resource conservation are a product of both broader life circumstances as well as resource-loss events. Conditions of resource loss tend to lead to further resource loss, sometimes engendering a cyclical process. When losses occur, individuals apply resource-conservation strategies, whereby they utilize resources available to them in order to adapt as successfully as possible. Successful adaptation generates new resources which, in turn, replenish people's resource pools and offset the conditions that produce acute and chronic resource loss. Those with less coping capabilities will have to employ riskier resource protection and gain strategies, which are less likely to yield the results hoped for (Hobfoll, 1998). Unsuccessful strategy employment results in both psychological distress as well as material loss, such as the diminishment of the resources invested. Such unsuccessful loss-prevention strategies further generates secondary resource loss, resulting in loss spirals.

Conservation of Resources Theory: Application to Learning, Assessment, and Test Anxiety

COR theory can be applied to education and assessment by conceptualizing test anxiety as a loss of resources (loss of self worth, motivation, and of productive cognitive processing) affecting students' learning and performance. Within the framework of COR theory, test anxiety can be understood as a severe stressor. Resources can be outlined commonly used to cope with resources loss in school and other learning settings. When individuals generally strive to obtain, retain, and protect what they value, testing situations increase the probability for test anxiety and a loss of the associated valued resources. Stress in testing situations can be so excessive that it hinders a person's

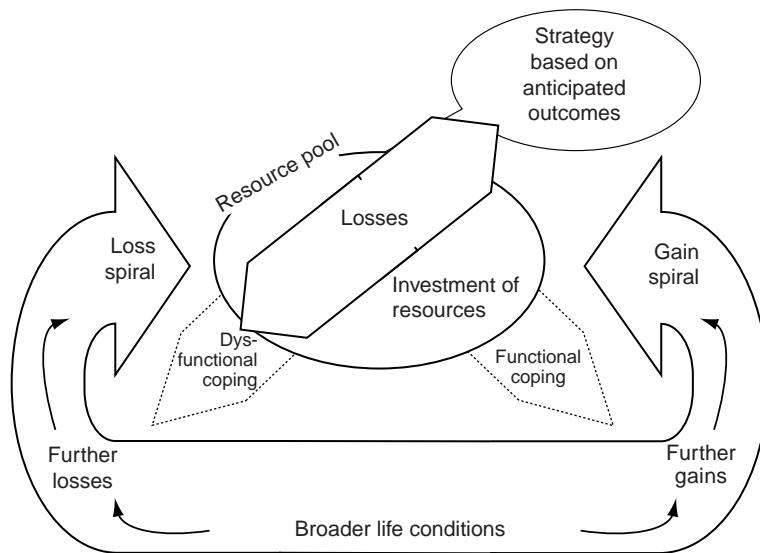


Figure 2 Processes of resource conservation.

ability to prepare properly and test effectively. Test anxiety is associated with poor performance, attacking self-worth and prospects for personal growth.

COR theory outlines four general categories of resources: objects, conditions, energies, and personal resources. Each of these resource categories aids coping efforts. For students facing testing situations we begin by considering object resources important to this group, such as a room of one's own, teaching books, and a computer. These resources provide the basis for coping: a computer provides access to knowledge and support; and a workroom provides a calm atmosphere for uninterrupted learning. In line with this is the finding that task interruption affects judgment and decision making. Condition resources facilitate acquisition or protection of valued resources. Critical conditions for students are: the kind of school, curriculum, stereotypes, assessment methods, and reference norm. For example, it is not uncommon for students to face social-referenced tests. The resulting phenomenon is also known as the big-fish-little-pond effect (BFLPE) and states that it is better for academic self-concept to be a big fish in a little pond (gifted student in regular reference group) than to be a small fish in a big pond (gifted student in gifted reference group). Empirical support for the BFLPE comes from numerous studies based on a variety of different experimental approaches. Zeidner and Schleyer (1999) examined this effect with respect to academic self-concept, test anxiety, and school grades in a sample of 1020 gifted Israeli children. The authors could confirm that academically talented students enrolled in special gifted classes, perceived their academic ability and chances for academic success less favorably compared to students in regular mixed-ability classes. These negative self-perceptions, in turn, served to deflate students' academic self-concept, elevated their levels of test anxiety,

and resulted in depressed school grades. Further, academic self-concept and test anxiety were observed to mediate the effects of reference group on school grades.

Other resources used to respond to stressful test situations are personal resources, including personal characteristics and skills. Individual characteristics most frequently studied in student samples include variables such as motivation, sense of control, and learning strategies. Anxiety has been shown to lower levels of motivation in highly evaluative learning settings and to impact learning strategies. It could be shown that anxiety was significantly negatively correlated with learning strategies involving rehearsal, active reflection, written help seeking, practical application, emotional control, motivational control, and comprehension monitoring. Self-efficacy, the individual's belief in their ability to execute behaviors necessary to achieve a certain goal, can be viewed as a potent resource that aids in coping with assessment and resultant stress. A series of recent studies has provided consistent evidence for the association between self-efficacy and test anxiety (see Zeidner, 1998 for a review). It can impact the goal of performing as well as enhance the internal motivation to manage the testing situation. Overall, results indicate that self-efficacy is a salient and powerful predictor of test anxiety and is negatively correlated with test anxiety.

Finally, energy is the fourth resource category in COR theory. Energy resources include money, time, and knowledge, and it allows access to other resources. With regard to test anxiety, examination-related knowledge is a significant energy resource. Empirical evidence was found for the fact that students with high test anxiety developed and maintained less complete conceptual representations of the course content. Their inadequate time management and procrastination of study tasks lead to various study problems. Thus, timely preparation and knowledge

gaining is a fundamental way to minimize test anxiety. A confident knowledge of course material is the first step in reducing test anxiety.

Resource Loss and Gain Spirals

COR theory states that those who lack resources are more vulnerable to resource loss, and initial loss leads to further loss. By contrast, those who possess resources are more capable of gain, and initial resources create further gain (Hobfoll, 1998). Many empirical findings in studies of learning, assessment, and test anxiety are consistent with such gain and loss cycles (see **Figure 3**). Young people with test anxiety are usually ambitious students who work hard and have high expectations of themselves. The situation may start with inadequate performance on a particular test, which then creates a general fear of the testing situation that hinders future performance, producing a vicious cycle of anxiety, learning, and poor performance associated with several losses in many ways and at many points in the learning process. Anxiety affects motivation during the learning process, the assessment of learning, and the learning strategies that are employed by students. The cumulative effect of anxiety can ultimately be detrimental to a student's overall learning. When considering the nature of the feedback process of emotion, cognition, learning, and assessment, test anxiety can continue to negatively impact a student's academic career in terms of an educational loss

spiral. Still, COR theory with its emphasis on conservation and protection of resources also has implications for understanding the potential positive impact of stressful events as described by Yerkes and Dodson (see **Figure 1**). Students experiencing stress and anxiety facing a testing situation seek both to repair the damage and to mobilize resources for further resource protection (Hobfoll, 1998). A little nervousness can actually help motivate students and provoke them to learn and seek for support. A limited amount of stress is natural and helps to keep learners mentally and physically alert. However, too much may cause physical distress, emotional upset, and concentration difficulties.

Different Assessment Approaches: A Comparison

Students' performance can be assessed in several ways in order to gain information that tells directly or indirectly about the learning process or results. Direct evidence of the process is gained if students show their mastery of learning goals through the demonstration of knowledge, skills, and other gained resources. Indicators for that mastery are resource-oriented ratings of students' competences in research projects, presentations, and performances. Indirect evidence is provided by grades of class tests or examinations that allow making inferences about learning, but does not demonstrate actual learning.

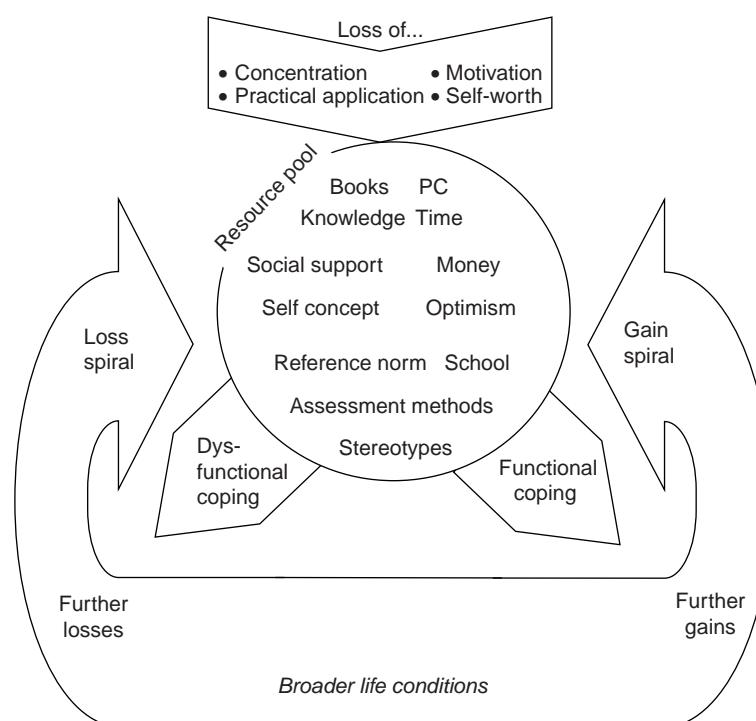


Figure 3 Processes of resource conservation of students facing an assessment. Note that words in upper case refer to object resources; words underlined refer to energy resources, words in lower case refer to condition resources ; and words in bold refer to personal resources.

(Standardized) Written Tests

A test or a written examination is a technique to assess students' knowledge, skills, or abilities. Tests are usually divided into several parts, each covering a different area of the field to be tested. It is generally recognized that these commonly used tests focus on deficits and can provide a teacher with only a limited view of students' achieved knowledge during a semester course or class (Slater, 1997). A standardized version of a test is one that measures ability of every individual subject against a norm or a standard that may be established independently, or by statistical analysis of a large number of subjects. Standardized tests, using multiple choices true-false or fill-in-the-blanks questions, also provide only a limited basis for understanding and evaluating student performance. They deal primarily with factual information. These deficiencies and others have been thoroughly described and documented. However, in the US and other countries, multiple-choice tests have come to be used for assessments of great importance (e.g., high-stakes tests). Testing becomes more and more omnipresent, and the consequences associated with test performances are ever increasing. Consequently, examination stress and test anxiety have become pervasive problems in modern society and the level of test anxiety in both students and teachers has increased as well.

Oral Examinations

An oral examination provides a meaningful procedure in terms of testing for extended problem-solving ability. It normally consists of 30–120-min sessions and is spent with an oral examiner or conducted by a panel. A typical oral exam involves one or two students interacting only with the instructors. Examinees have to demonstrate that they possess the knowledge, skills, and abilities required by giving complete answers to the questions. If the examinees do not know the answer to a question, anxiety can arise, hindering appropriate thinking. However, examiners may be assessing examinees' ability to deal with this difficult or complex situation. Besides exam-related knowledge, other skills are assessed, such as nonverbal language and communication skills. Considering the great variety of social tasks in an oral examination, it is evident that interpersonal resources are of potential relevance and are broadly recognized as important in this context. Buchwald (2003) focused on the examiner-examinee relationship with respect to test anxiety and communal coping during an oral examination. She explored how coping strategies of examiners were related to nonverbal stress behavior and performance of examinees. The study revealed that in examiner-examinee dyads, where male examiners utilize more dominant coping patterns (e.g., aggressive-antisocial action), female examinees were more likely to utilize passive-submissive patterns reflected by avoidance and showed poorer performance.

Online Assessment

Online and computer-based assessment, particularly for universities, are natural consequences of the rapid growth of using the Internet and computer technologies to enhance learning. As more students seek flexibility in their courses, there will be growing expectations for flexible assessment as well. The major educational question is whether online assessment, including multiple-choice questions, is having any influence on the learning benefits and on test anxiety. Although there is some evidence that online assessment can encourage students to focus on lower-level cognitive skills, there are possible positive effects as well on test anxiety. On the one hand online assessment concentrates primarily on true/false or multiple-choice responses, and can have direct negative effects on student approaches to learning by encouraging narrow reproduction rather than the development of higher-order cognition. On the other hand, students taking tests online reported lower levels of perceived test threat (Cassady and Gridley, 2005). This might be due to the fact that online tests enable students to schedule tests following their own workload and allow the students to reduce the level of contextual stress by strategically placing their testing times in convenient time slots.

Portfolios

Portfolios provide a forum for extended and complex learning activities and observations (Klenowski, 2002). Generally speaking, a portfolio is a systematic collection of a variety of teacher observations and student products, collected over time. It reflects a student's developmental status and progress made in a specific field. In such a procedure that focuses on learners' resources, much of the responsibility of both learning and assessment is transferred to the student. Slater (1997) explored the effectiveness of portfolio-assessment strategies and could show that students assessed by portfolios scored just as well on a traditional multiple-choice final examination as their traditionally assessed counterparts. In addition, the students reported reduced levels of test anxiety and enjoyed class discussion more because of the atmosphere promoted by the assessment strategies employed.

Observation of Cooperative Learning Activities

What are needed in addition to traditional assessment methods are those methods for understanding students' learning skills and learning styles (Panitz, 2001). Cooperative learning activity offers teachers an excellent opportunity to observe students interacting, explaining, arguing, helping their peers, and being helped. These observations can provide significant insights into a student's ability and performance level (Panitz, 2001). One important point is that it brings about informal conversations between

individual students, cooperating groups, and the teacher which help to create a more personal class environment. Students get to know the teacher and vice versa, which, in turn, might enhance sympathy and reduce uncertainty and test anxiety. Cooperative learning can also foster cooperation and connections with their peers, enhance team building and teamwork skills, and eliminate cheating. Further and most importantly, cooperating creates a more humane learning environment, is associated with higher levels of student satisfaction, and lowers test anxiety (Muir and Tracy, 1999). Observation of cooperative learning activities could also help identify students who are shy and anxious in order to encourage their participation in nonthreatening ways. Due to the permanent observation process, teachers know which students perform well and which need individual promotion. Teachers can help students understand when they have gained resources by mastering course material, which can reduce anxiety, raise students' self esteem, put them in control of their own destiny, and emphasize that they are responsible for their own learning. The results they obtain are based upon their efforts, not the teacher's. Only very few studies have examined the relationship between collaboration in an evaluative context and test anxiety and even fewer have attempted an empirical assessment of this association.

Product/Project Assessment

A project can be a task given to an individual student or a group and results in a product. The product as well as the processes used during the project can be assessed. Projects are primarily learning experiences, and secondly, an assessment task. There are several advantages of project assessment tasks; for example, they allow teachers to assign projects at different levels of difficulty to account for

individual learning styles and ability levels. They can be motivating and can provide an opportunity for positive interaction and collaboration among peers, and increase students' self-esteem as they would not feel tested as in tests or traditional writing assignments.

Overview of Alternative Assessment Approaches

We outlined the pros and cons of several assessments techniques and their relatedness to test anxiety. **Table 1** presents a wide range of assessment ideas classified into four categories: tests, project assessments, performance assessments, and process skills assessments.

Implications and Future Directions

We have introduced test anxiety as a major predictor of performance and have presented the basic framework of COR theory and offered it as a possible explanatory model for the study of assessment of student learning, stress, and anxiety. COR theory may be applicable to stress during testing situations as resources are often lost and challenged under such circumstances. Testing and assessment might produce a loss of resources and the consequences of such circumstances are often long term. For students, increasing pressure to perform well in tests, combined with cognitive interference, a lack of self-efficacy and motivation, as well as negative life conditions (e.g., inadequate opportunities to learn), can lead to test anxiety and feelings of hopelessness. This, in turn, can cause students to stop trying to improve their performance. Consistent evidence of poor performance repeatedly

Table 1 Alternative assessment approaches

Tests	Products	Performances	Process skills
Essay	Art exhibit	Activities	Checklist observations for processes
Fill in the blank Matching	Audio cassettes Books	Character sketches Cooperative learning group activities	Experiences checklists Interactional analyses
Multiple choice True-false	Collages Computer creations Drawings Essay Journal Lab reports Poem Portfolios Posters Projects Results of surveys	Dances Discussions Demonstrations Experiments Laboratory experiences Reports Simulations Exercise routines	Interviews Metaphor analyses Observations Oral questioning Question production Retelling in own words Describing how something was done and justifying the approach used

reported to families, peers, and to the public can result in a long-lasting loss spiral.

Focusing on resources helps to appreciate that evaluative stress affects students, teachers, and schools, both on a personal level as well as on an environmental level. COR theory highlights that these different resource levels are interrelated and produce a web of interactions that must be understood if we are to explain stress reactions and test anxiety. That is, the potential impact of stress in evaluative settings seems to differ from how and by whom the assessment is done (object and condition resources), in which way it affects the educational career (condition resources), and also how it is perceived by the person assessed (personal and energy resources). Evaluative stress threatens and challenges resources and can result in the loss of the most precious resources. How well students respond depends, in part, on the degree of resources that are lost and the extent to which they can preserve resources in order to initiate the recovery and rebuilding of resources.

Using COR theory as a framework to understand the loss and resilience of students, we can work to make schools and other educational institutions more responsive to their unique needs. Despite large-scale assessment or written class tests, those assessments are needed that enable teachers gather information about student learning on a day-to-day basis and enable them to use it to benefit students. Individual classroom assessment might increase performance and decrease the loss of self-worth and self-efficacy. Black and William (1998) could confirm in their comprehensive meta-analysis, of more than 40 controlled studies, the impact of improved classroom assessment on subsequent student success. Underlying the various approaches to improving classroom assessment are assumptions about what is responsible for effective learning is in particular that students have to be actively involved in the assessment process. This includes a resource-oriented, student-involved feedback process. Moreover, student-involved record keeping brings students into the process of monitoring improvements in their performance through repeated self-assessments over time. One way to accomplish this is by having students build portfolios of evidence of their success over time and requiring periodic student self-reflections about the gains of resources.

COR theory also provides guidance for future research questions. Although much is known about stress, anxiety, and coping in evaluative settings on an individually perceived and deficit-focused level, a resource-oriented perspective leads to new questions. How can teachers help their students want to learn? How do they encourage them to feel self-efficacious and take responsibility for maximizing their own success? How can assessment be used not as a source of stress and anxiety but as a source of confidence? How can we provoke a gain spiral?

Using COR theory to better understand the impact of evaluating settings on the processes of resource loss and

gain might greatly expand our understanding of how students experience loss as well as how they become able to cope with these losses.

Summary

The topic of this article is in a way a tricky one because it stresses two facets of the role of teachers which are not really compatible: on the one hand stands the obligation to create a student-centered pedagogy, including, for example, problem solving in teams by using communal coping strategies, and on the other hand stands the requirement to evaluate these students. This dilemma which comes to its peak with respect to high-stakes testing can lead to negative feelings such as stress, anxiety, or bad mood in both, teachers as well as students. With respect to teachers, a wide range of literature refers to burnout as an outcome of this conflict, while the detrimental effects of assessment on students worldwide is documented roughly in this article. The research outcomes for both groups are depicted mostly in different bodies of literatures which might be due to the theoretical underpinnings of looking at the emotion of anxiety in an individualistic manner. The introduction of the COR theory focuses on the different aspects of resources and the possibility of experiencing loss and win spirals makes it possible to look at both, teachers and students simultaneously as persons who strive to build, protect, and foster their resource pools. This viewpoint gives way to new research combining the aspects of psychosocial well-being of teachers and students with different categories of assessment.

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Educating Students with Emotional and Behavioral Disorders

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Glossary

Cognitive behavioral interventions – Strategies used to teach the use of self-talk or inner speech to regulate overt behavior.

Externalizing behavior – Constant and destructive acting out behaviors such as verbal and physical aggression, arguing, chronic outbursts, and general unpleasant behaviors.

Functional behavioral assessment – A measure used to identify the purpose of a student's behavior by focusing on the function of the behavior in relation to its environment or context.

Internalizing behavior – Covert behaviors that are often concealed from plain view such as withdrawal, sad affect, excessive fears, and phobias.

Negative reinforcement – The removal of an aversive condition to serve as a form of reinforcement to increase desired behavior.

Overcorrection – Requiring the students to engage in repetitive action as a penalty for inappropriate behavior.

Positive reinforcement – A reward that is positive, or pleasing, to a student presented after an appropriate behavior.

Pre-referral – Systematic and collaborative efforts to prevent formal referral and placement of students in special education programs.

Punishment – The presentation of an aversive condition to decrease undesired behavior.

Response cost – The removal of a reinforcer when undesired behavior is displayed.

For professional educators, providing a quality public education for all children and youth has always been a challenge. Even in the best of circumstances, effectively delivering academic, social, and emotional learning can be complicated and frustrating, yet at the same time, it can be professionally rewarding. The educational enterprise, however, becomes especially difficult and perplexing when children and youth display behaviors that can be described as disruptive, deviant, violent, antisocial, aggressive, destructive, and/or noncompliant. Despite years of conceptual and empirical progress in understanding and successfully serving school-aged children and youth with emotional and behavioral disorders (EBD), there continues to be a host of perpetual problems that the field of special

education continues to work through and will for decades to come. This article focuses on how students with EBD are identified, the prevalence and characteristics of the disorder, and the complex issues related to where students with EBD are taught. Evidence-based prevention and intervention strategies that can maximize the potential of students with EBD are described and, finally, several special issues that confront the field of special education in the education of students with EBD are explored.

Defining EBD

Behavior exists on a continuum with no clear delineation between what is considered normal and what is abnormal or disordered. Indicators used to identify or diagnose disordered behavior include how frequently and severe undesired behavior is displayed. Defining disordered behavior is inherently subjective and the task to determine what intolerable and disordered behavior is often falls to authority figures such as medical personnel, teachers, or mental health professionals (Kauffman, 2005). While there is concern about the stigmatizing effects that assigning labels to children may have, the use of labels and accompanying terminology is a means from which to secure the necessary financial resources to diagnose and provide treatment. Terminology used across the education and related fields such as mental health and social services may vary to some extent, and, at times, they may signify the conceptual approach taken by a field. The legal term used in the special education federal definition of children with significant behavioral problems is emotionally disturbed. Various states use differing labels ranging from emotionally handicapped to socially impaired. Professionals in the field of special education commonly use the term EBD because they feel it more accurately describes the condition.

The Individuals with Disabilities Education Improvement Act (IDEA) of 2004 defines emotional disturbance as:

- a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance:
- A. An inability to learn which cannot be explained by intellectual, sensory, or health factors.
- B. An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
- C. Inappropriate types of behavior or feelings under normal circumstances.

- D. A general pervasive mood of unhappiness or depression.
- E. A tendency to develop physical symptoms or fears associated with personal or school problems.

The term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance.
(US Department of Education, 2006)

Problems with the Federal Definition

Vague language and undefined terms included in the federal definition have led to dissatisfaction among professionals. Criticisms include the subjective nature of phrases such as to a marked degree or over a long period of time, the potential exclusion of children and youth who do not qualify because they are not academically delayed, or exclusion of children who are labeled socially maladjusted. Interpretation of the definition has been left to the states which some professionals describe as creating “at best a great potential for inconsistency across referred children and, at worst, conditions allowing unchecked bias, inequity, and prejudice” (Knoff, 1995: 852).

Years ago, the National Mental Health and Special Education Coalition attempted to improve the definition by including more up-to-date terminology, using language that was sensitive to ethnic and cultural differences, excluding problems due to temporary stress, acknowledging multiple disabilities, and not arbitrarily excluding the full range of emotional or behavioral disorders (Forness and Knitzer, 1992). While proponents are advocating for change, the proposed definition has not been adopted or incorporated into federal laws and regulations.

Characteristics of EBD

In general, students served in programs for EBD display highly visible and chronic externalizing maladaptive behaviors (e.g., verbal/physical aggression, noncompliance, excessive teasing, and classroom disruption) that are against universal social norms and behaviors expected for a safe learning environment. When engaging in aggression and disruption, peers may look elsewhere for companionship and positive social interactions and may elicit negative counter responses creating a negative spiral of aggression and continued rejection. At times, peers may reinforce a student’s aggressive behavior unintentionally by attending to it or complying with the aggressor’s demands. What is most problematic, however, is that students who exhibit aggressive, maladaptive behaviors associate with peers who act in similar ways, thus perpetuating their aggressive behavior and increasing their rejection by nonaggressive peers (Bierman *et al.*, 1996). For those students in EBD programs, who exhibit more covert maladaptive behaviors (e.g., depression, anxiety, excessive fears, and phobias),

their behaviors may also elicit social rejection that can contribute to withdrawal from lasting, positive social relationships.

Cognitive Characteristics

In general, students placed in special education programs for EBD have intelligence quotients (IQs) in the low average range, although scores can be below 70 (often considered mental retardation) and in the upper range that could be considered gifted. As might be expected, students with EBD in the low average IQ range, often experience academic difficulties. Since these students engage in classroom disruption and often lack motivation to complete tasks, they may experience increasing deficits in their academic performance as they progress through the school years. Students who are placed in EBD programs may have academic deficits in all areas, and may have more extreme deficits in reading and math (Bos *et al.*, 2002). Interestingly, researchers have found that 30–40% of students who exhibit EBD also have learning disabilities (LD; Fessler *et al.*, 1991).

Behavioral Characteristics

What most readily comes to mind about students with EBD is their externalizing behaviors, or constant and destructive acting-out behaviors such as verbal and physical aggression, arguing, chronic outbursts, and general unpleasant behaviors. What often goes unrecognized, however, are student behaviors such as withdrawal, sad affect, or excessive fears and phobias that are more covert or internalizing, and are concealed from plain view.

Externalizing behaviors

Externalizing or overt behaviors are characteristically interpersonal and are more easily identified by teachers and others professionals than the internalizing type. Externalizing behaviors are typically the acting-out and noncompliant type. Students who exhibit EBD are often described as aggressive and tend to experience continual negative interactions with authority figures at school and in the community. Externalizing behavior problems may be part of a student’s escalating spiral of conflictual relationships with family members, peer group, and, in later years, with fellow workers and in marital situations. As these overt and undesired behaviors frequently elicit negative responses, they can limit the much-needed positive interactions with others and contribute to a deleterious pattern of opposition and negative social status.

Internalizing behaviors

Teachers and other professionals often overlook students who have significant internalizing or intrapersonal problems. As students with internalizing disorders do not

typically display more noticeable disruptive behaviors in the classroom, they become less frequently noticed as those with externalizing problems. Internalizing problems can take the form of childhood depression, anxiety, fears and phobias, and obsessive-compulsive disorder. Students' internalizing problems can sometimes negatively affect their academic success, socialization with peers and adults, and overall development.

Prevalence and Causes of EBD

The issue of prevalence of EBD is closely linked to its definition. The criteria used to judge the presence of any disorder is sometimes subject to a changing consensus. Therefore, it is difficult to make precise statements about the overall prevalence of children with behavioral disorders considering differing criteria across states and decades. Prevalence estimates, from the most recent Office of Special Education Programs, 25th Annual Report to Congress (US Department of Education, 2007), indicate that students ranging in age from 6 to 21, who received special education services for EBD, remained steady at about 0.7% from 1993 to 2003 and was approximately 8% of the total students in 2003 who received special education services. Identification of EBD is more likely for students who are racially and ethnically diverse. The US Department of Education (DOE) also reports that black students are 2.3 times more likely to receive special education services related to EBD than all other racial/ethnic groups combined.

The causes of EBD are complex and interrelated. Most behavioral problems occur in combination with other problems, thus causal influences can be viewed from both biological and environmental perspectives. According to Kauffman (2005), the causes of EBD can be arranged around four general categories: (1) the individual child, (2) family, (3) school, and (4) culture.

Individual Child

All behavior is a dynamic mix of biological dispositions and environmental contexts. Some biological factors suspected to contribute to emotional or behavioral disorders are: (1) genetics, (2) brain damage or dysfunction, (3) nutrition, (4) biochemistry, (5) physical illness or disability, and (6) temperament (Kauffman, 2005). Each of these factors may contribute individually or intermix with others to help explain the presence of EBD.

Family

Various influences, such as family structure, socio-economic status, and styles of parental discipline, may serve as contributing factors to the development of EBD.

Complex interactions between conditions suggested by social demographic indicators and family dynamics have been shown to correlate with the presence of EBD. These indicators include poverty, absent fathers, divorce or separation, and hostile family relationships (Rutter, 1985). Researchers, however, suggest that while these factors may increase the risk for developing EBD, they may not be causes in, and of, themselves (Kauffman, 2005).

School

There are several factors found in schools that could contribute to the presence of EBD. Researchers indicate there is a strong correlation between poor academic performance and the presence of EBD. Disordered behavior and poor academic performance may result in social consequences that may cultivate more undesired behaviors. Kauffman (2005) suggested six ways schools may contribute to academic failure and disordered behavior, namely:

1. insensitivity to students' individuality,
2. inappropriate expectations for students,
3. inconsistent management of behavior,
4. instruction in nonfunctional and irrelevant skills,
5. poor reinforcement contingencies, and
6. undesirable models of school conduct.

In addition, the difficulty of finding qualified teachers for students with EBD places immense pressure on district personnel to provide quality instruction to those students who are often the most difficult to manage as well as the most difficult to teach. Chronic teacher shortages in special education and the fact that many teachers are ill-equipped and underqualified, especially in the area of EBD (Blake and Monahan, 2007; Hampton and Hess-Rice, 2003), can compromise the high-quality teaching necessary in academic instruction and social and emotional learning.

Culture

Aside from the cultural factors that influence a student's behavior in families and schools, standards and values of the larger cultures in which they live can have effect. The effects of popular culture with advertising, mass media, videogames, and violent movies may all play a role in increasing inappropriate behaviors (Coyne *et al.*, 2006). The culture of peer groups, communities, ethnicity, and social class are all factors that may also influence the development of a behavioral disorder. Rarely can the development of EBD be attributed to a single particular cause. Most significant behavioral problems, such as EBD, are due to a combination of factors that occur on many levels and locations. Physiology, parenting, teaching, and culture may all play a part in the development of a disorder but must be considered uniquely for each individual.

Assessment and Eligibility of Students with EBD

Regular education teachers who may experience significant problems with a student's behavior may think seriously about the referral of the student for special education services. Referral requires a significant assessment process designed to collect enough information by a team of professionals (including parent(s) and sometimes the student) to make an informed judgment about eligibility, determine an effective instructional program through an individualized education program (IEP), and agree upon the best placement option. To prevent formal referral, prereferral strategies are often generated as an attempt to keep students in the least-restrictive educational environment.

Prereferral

Prereferral strategies are systematic and collaborative efforts to prevent costly and time-consuming formal referral and placement of students in special education programs. For students with significant behavioral problems in the classroom, prereferral is a way for teachers to systematically approach behavioral issues to mollify their effect on the educational environment. Prereferral usually involves a team of education professionals who can approach carefully, in a collaborative manner, a student's behavioral issues. From this collaborative approach, specific action plans are developed to facilitate the student's success in the regular education environment, such as designing reinforcement programs for appropriate behavior, enlisting parent help, or enlisting other professionals' support such as school psychologist or school counselor. Before formal referral, prereferral efforts must be documented indicating that the student fails to respond positively to reasonable accommodations.

When Congress reauthorized IDEA in 2004, the law included a response to intervention (RTI) approach for the identification and eligibility of students with high-incidence disabilities. IDEA (2004) encourages schools to "... use a process that determines if the child responds to scientific, research-based intervention as part of the evaluation procedures..." (Section 1414(b)(6)). While this change in law was written specifically for determining eligibility of students with specific LD, the RTI model has found support for use across special education, including EBD.

RTI is a model used by school systems to systematically guide the prereferral process and ensure the provision of scientifically based intervention strategies. The three-tiered model provides increasingly intense services to students based on student outcome data. Tier-one universal interventions are based on core curriculum and address the needs of approximately 80% of the school population. Tier-two group interventions typically serve

approximately 15% of a school population and involve more intensive instruction. The third tier of intervention serves approximately 5% of a school population and provides services for the small number of students who need individualized instruction (Hawken *et al.*, 2008). While implementation differs across settings, the key components of RTI include a process that screens for at-risk students, monitors responsiveness to scientifically based instructional interventions, and uses outcome data to determine a course of action (Elliott, 2008).

Cheney *et al.* (2008) reported that tier-two instruction with at-risk students for EBD reduced the students' at-risk status and helped prevent the development of EBD. RTI data may also be taken into consideration when determining student eligibility for EBD services. The influence and implementation of the RTI model have had a positive impact on prereferral and other educational services for students with EBD.

Referral and Determining Eligibility

If prereferral strategies fail to provide a student the necessary supports for success, special education referral procedures become necessary. Referral for placement in special education, because of a suspected EBD, would include all of the typical evaluation procedures, such as measures of intelligence and achievement, but might also include assessment of social competence and peer relations through interviews, self-reports, anecdotal reports, behavior rating scales, and direct behavioral observations. For students being referred for EBD, direct observation, a method of recording specific behaviors, is typically conducted by someone other than the student's teacher, and the use of behavior rating scales insure that the assessment of students is based on numerous informational sources (i.e., people and behavioral instruments). As part of the assessment process, multidisciplinary team members must also assess the effect of a student's behaviors on peers, teachers, and family members and assess the effect of the teacher's behaviors. A teacher's interactions with a student may make a student's behavioral problems worse; hence, teacher and student interaction observations can significantly influence classification, placement, and treatment recommendations.

After all the necessary information is collected, students referred for EBD services become eligible if they exhibit behavioral problems as specified in the special education law to a marked degree and over a long period of time, and if their educational performance is affected. At the same time, the multidisciplinary team makes an eligibility decision and considers the need for related services (e.g., counseling and social services). For those students identified and requiring special education and related services, there exist a variety of placement options

along a continuum that ranges from least (e.g., regular class with supports) to most restrictive (e.g., hospital or homebound instruction). Other placements could include regular class placement with some programming in a special education resource room, a separate special education class for students with EBD for most of the school day, a separate school for students with EBD, or a residential setting. It is up to the multidisciplinary team to decide what setting is in the best interest of the student and what programming best meets their academic and social needs.

Functional Behavioral Assessment and Behavioral Intervention Plans

IDEA mandates that a functional behavioral assessment (FBA) be conducted for those students whose behaviors necessitate a change in school placement or represent a chronic pattern of misbehavior. Professionals use FBA to identify the purpose of a student's behavior (e.g., getting social approval from peers for inappropriate behavior and escaping a teacher's demand to complete work). FBA focuses on the function of the behavior (the why of the behavior) in relation to its environment or the context. When the function of a particular behavior problem is determined through a series of FBA steps, a behavioral intervention plan (BIP) is developed to assist a student in achieving the same or a similar goal (e.g., gain something or escape a demand) through more socially acceptable behaviors. Through FBA procedures, general and special education professionals can identify causes that may contribute to a student's inappropriate behaviors and design programs that can result in academic and social success.

Placement of Students with EBD

Nearly 70% of students with emotional disturbances spent more than 21% of their time outside regular education classes (US Department of Education, 2007). Nearly 47% of the students spent more than 60% of their day outside of regular education and some (16.9%) spent their entire day in a separate environment. Students with EBD are served in separate environments more often than any other categorical area except for deaf-blind and multiple disabilities (US Department of Education, 2007). The issue of where to best serve students with EBD has endured serious and long-term debate. The IDEA (2004) and other federal regulations mandate a continuum of alternative placements (CAPs), while some experts suggest that CAP segregates students from their more typical peers and access to the regular education curriculum. Kauffman and Smucker (1995) purported that specialized environments for students with EBD serve the following purposes:

1. protecting others (family, community, and schoolmates) from students' uncontrolled or intolerable behavior;
2. protecting students from themselves or others;
3. educating or training students in academics and other life skills and appropriate emotional responses, attitudes, and conduct;
4. educating or training children's families or teachers and peers to provide a more supportive environment;
5. keeping children available and amenable to therapies; and
6. providing opportunities for observation and assessment of children's behavior and its contexts.

There are, however, some special education advocates who disagree with Kauffman and Smucker (1995). Van Dyke *et al.* (1995), for instance, argued that all students with emotional and behavioral disorders are best served in the general education classroom. These advocates have noted that placing students in the general education classroom promotes a sense of belonging, provides opportunities to make friends, and more efficiently provides exposure to the regular education curriculum alongside nondisabled peers. They believe instead of providing separate environments, resources, and supports are better allocated for students with EBD to be successful in regular education classrooms. In addition, they argue that it prepares all students, with and without disabilities, to participate in a diverse world where interaction with people of differing abilities and behaviors is commonplace. In fact, this debate about the best placement model for students with EBD is ongoing. Professionals and advocates on both sides of the issue agree that children with disabilities should be educated in as typical an educational experience as possible. The discussion continues however, as to how this can best be accomplished.

Strategies to Prevent EBD

The prevention of problem behavior is an issue that receives much attention in politics and the national media. Traditionally, the procedures for identifying students with EBD are reactive and tend to occur after children's deviant behavioral repertoires are well established. Prevention of EBD is complicated by poor collaboration between service agencies, disjointed screening and eligibility criteria, and lack of funding for research and program implementation (Conroy *et al.*, 2004). This lack of coordination among agencies, such as schools, social welfare, and juvenile justice, is a fundamental obstacle toward prevention (Quinn and Poirier, 2004). Young children at risk for EBD are sometimes denied access to services due to eligibility restrictions and the lack of coordination is compounded by the fact that funding for prevention research is limited. Despite these barriers to

prevention, special education professionals and researchers are recognizing the value of prevention at the school, classroom, and individual student levels.

School-Wide Discipline

Media exposure and public perception of violence in schools have influenced administrators and policymakers to adopt rigid standards and a position of zero tolerance toward students who exhibit problem behavior in school (Quinn and Poirier, 2004). Researchers (e.g., Skiba, 2002) indicate that discipline practices that rely primarily on punishment and exclusion are ineffective and may actually contribute to an increase in problematic behavior. Recent prevention efforts, such as school-wide discipline strategies, use systematic processes to foster proactive solutions by implementing research based and validated practices. While there are several programs available to assist schools in the implementation of a unified school-wide supportive approach to discipline, many share similar elements such as:

1. a shared vision by the school staff on how to best prevent and minimize problematic behaviors based on evidence-based practices;
2. consistent and visible support by administrative leaders;
3. academic and social expectations are developed and implemented collaboratively by all staff; and
4. program change decisions are informed by evaluation of effectiveness data collected at the school (Colvin, 2007).

Prevention Strategies in the Classroom

Gresham (2002a) asserted that adopting an approach to prevention that begins with whole-class strategies and moves to addressing individual student needs may reduce over identification of children for special education. Witt *et al.* (2004) suggested the necessary components for prevention include solid academic instruction, explicit instruction of positive behavioral expectations to students, and consistent and effective teacher responses to inappropriate behavior. The emphasis should be to create a supportive classroom environment that promotes academic participation and achievement for all students. In addition to effective academic instruction, the promotion of positive behavioral expectations increases the length of academic engagement and decreases problem behaviors (Witt *et al.*, 2004). Positive behavioral expectations should be explicitly taught to students allowing adequate time for practice and feedback. Once students are aware of and can perform to expectations, careful monitoring of student behavior by teachers, coupled with the consistent delivery of effective contingent consequences, is central to maintaining behavioral compliance. Clearly, emphasis on proactive practice has led to procedures that identify environmental

contingencies that promote problem behaviors and the adaptation of those variables to reduce future misbehavior. A focus on class-wide effective academic instruction and proactive instruction of behavioral expectations are promising approaches for the prevention of behavioral problems. Sometimes, however, school-wide and classroom strategies are insufficient to address the needs of individual students who may require services that are more intensive.

Individual-Student-Centered Prevention Strategies

If school-wide and classroom attempts to promote desired behavior are ineffective, interventions based on a functional assessment of an individual student's behavior is the most effective evidence-based strategy currently available (Iwata *et al.*, 1993). Evidence in support of its use is so strong that the requirement to functionally assess chronic problem behaviors was added to the reauthorized IDEA in 1997. While functional assessment is used to identify the causes of behavior and to develop effective interventions for students with EBD, it can also be used as a strategy for prevention with individual students at risk for EBD. To a large measure, functional assessment examines the effects of specific environmental variables on a student's maladaptive behavior. Direct manipulation of these variables through intervention along with consistent monitoring of the effect on behavior reveals which contingencies may be supporting the enactment of the problem behavior. Interventions can then be adapted, based on the empirical evidence collected during the assessment. Once these interventions are implemented, progress is monitored and adaptations are made relevant to the performance of the individual as determined by ongoing data collection.

Intervening to Reduce Extreme Problematic Behaviors

While prevention efforts at school, classroom, and individual levels are foundational for effective management of student behavior, students who exhibit EBD may still require extensive behavioral programming to mollify the effects of their behavioral excesses and deficits. Reducing maladaptive behaviors and increasing appropriate ones can be achieved through the use of behavioral principles, such as reinforcement and punishment procedures, and appropriate replacement behaviors can be taught to students using social skill instruction, self-management techniques, and through the use of cognitive-behavioral interventions (CBIs).

Using Behavioral Principles

Teachers and service providers typically use behavioral strategies such as reinforcement to increase positive and

desirable behaviors and punishment to reduce unwanted and maladaptive behaviors. Positive reinforcement is a reward that is positive, or pleasing to a student presented after an appropriate behavior. Reinforcers can be of four types:

1. tangibles (e.g., toys, school supplies, posters, and magazines);
2. activities contingent on acceptable behavior (e.g., playing board games and listening to music);
3. social reinforcement (e.g., high five for work completion and verbal praise); and
4. token reinforcement (e.g., points to reach an established goal or imitation money exchangeable for some valued object or activity).

Conversely, negative reinforcement is the removal of an aversive condition and can also serve as a form of reinforcement to increase desired behavior. For example, a teacher may say to a student who is off task that if the work is not finished on time, he/she will have to finish it in detention. If the student completes the assignment on time, then he/she was negatively reinforced because he/she finished the work to avoid detention.

Punishment is used to reduce the future occurrence of problematic behaviors. Teachers and service providers may use reprimands, response cost, time out, and over-correction. A reprimand is a short verbal scolding or correction that is designed to reduce inappropriate behavior. Response cost would be the removal of something the student has earned, such as points or privileges, when inappropriate behavior is displayed. Time out is usually associated with removing a student from a reinforcing activity or environment. Sending a student back to his/her desk as a result of inappropriate behavior during group work, sending a student into the hallway or to another room, or sending a student to the principal's office can be considered time out from reinforcement. Overcorrection typically happens when a teacher has a student engage in repetitive action as a penalty for inappropriate behavior. Although overcorrection has many forms, examples would include asking an unruly student to practice getting in line calmly and orderly a few times, and directing the pick up of refuse after a student kicks a trash can with additional cleanup of the rest of the floor. Using punishment, however, should always be a teacher's last resort to decrease unwanted behaviors from happening in the classroom. There are more positive techniques than punishment to help students decrease socially undesirable behaviors with more socially appropriate ones.

Teaching Appropriate Replacement Behaviors

Not only do teachers have to reduce problem behaviors of students with EBD, but they also need to explicitly teach more appropriate and positive replacement behaviors that

can lead to more successful long-term outcomes. Teaching replacement behaviors can be accomplished through social skills training, CBIs, and teaching self-control techniques to students.

Social skills training

There are a number of reasons to teach social skills to students who exhibit EBD. Social skills are arguably the most important skills students learn, not only in school, but also as they grow into adulthood. The ability to get along successfully with other people is a criterion for success for students with EBD whether at school, in the work world, family, or community. Before social skill instruction, assessment of a student's social strengths and weaknesses must occur. Assessment can help identify individual student needs, monitor progress, and evaluate the viability of a teaching strategy. Behavior rating scales or peer rating scales might be useful to assess student social skills. A teacher can identify a student's social strengths and determine areas that need some instructional intervention by combining direct observation of a student's social behavior and functional assessment of behavior (Gresham, 2002b).

Typically, social skills are taught by defining and modeling the skill to be learned, setting up role-plays for students to learn the skill steps, giving performance feedback, and, most importantly, providing opportunities for practice (see Goldstein and McGinnis, 1997). The teacher can also provide homework so that learned skills can be practiced and generalized to situations outside of the learning setting. Students have generalized or transferred their learning when they reliably perform the social skill in new and novel places, with a variety of people and situations, and with variations of the learned skill.

Cognitive-behavioral interventions

CBIs are designed to teach the use of self-talk or inner speech (verbal self-regulation) to regulate overt behavior. Simply, verbal self-regulation is talking to oneself to guide problem solving or some other behavior. CBIs are often described as stop-and-think strategies. Problem solving, one type of CBI, is a useful cognitive process that can help students with EBD analyze in a better manner their social encounters during the day and to exercise self-control. Problem solving consists of a series of mental steps designed to identify and define problems, generate a menu of appropriate responses or solutions to solve the problem, select an efficient and effective solution, and make a plan to carry it out successfully (Smith and Daunic, 2006).

Self-control

As students become older and enter into the world of work, the ability to successfully regulate or self-manage their own emotions and behavior becomes critical. Self-regulation begins when students take responsibility for their own behavior and learn to use internalizing or

cognitive processes that will enable success when external systems, such as reinforcement and punishment, are unavailable. Teaching self-regulation represents a critical step in reducing or fading a teacher's participation in controlling a student's behavior. Teachers and service providers can help students with EBD learn self-management strategies and use CBIs to increase self-regulatory functions (see Polsgrove and Smith, 2004). Self-regulation or self-management strategies include self-assessment of problematic behaviors and the necessary replacement behavior, self-monitoring of those behaviors, and self-reinforcement when the student experiences success. Self-management strategies are often recommended for students who are manipulative or oppositional when confronted and for facilitating the success of students who are mainstreamed into less-restrictive placements.

Special Issues: Looking at the Future

Providing a quality educational experience for students with EBD is and will continue to be problematic; however, despite the immense gains in providing successful programming for these students, there are complex issues that professionals still confront. Students with EBD exhibit such extreme behavioral deficits and excesses that issues related to suspension and expulsion and placement in alternative school settings differentially affect this population. Of special note is that minority students are disproportionately represented in EBD programs.

Suspension and Expulsion

Disciplining students with EBD who violate acceptable standards of student behavior is (and will continue to be) complex and often a contentious issue. Since students with disabilities are guaranteed a free and appropriate public education (FAPE), as outlined in case law and in IDEA (2004), long-term suspension (more than ten consecutive school days) or expulsion of students (removal from a current educational setting) with EBD can violate a student's right to FAPE. Any long-term suspension for violating acceptable standards of behavior or expulsion for egregious violation of the code of student conduct (e.g., weapons, drugs, and serious bodily injury) is considered a change of placement and can occur only after a meeting of the student's child study or IEP team. At that time, the team is to make a determination about the relationship between the student's misconduct and disability. Since students with EBD are served in special education because of their significant behavior problems, determining whether or not the misconduct is related to the disability is sometimes uncertain and confusing.

Placement in Alternative Educational Settings

Alternative educational settings are designed for students who are at risk for school failure. Alternative schools typically are small, personalized settings that emphasize individualized educational, vocational, and general living skills. Researchers have found that about 12% of students who are attending alternative schools are students with disabilities, mostly students with LD or EBD (Lehr, 2004). Students with EBD may be placed in alternative settings after a disciplinary removal or expulsion for violating the code of student conduct (e.g., weapons, drugs, and serious bodily injury). This placement option can only be considered when all procedural safeguards are followed as outlined in IDEA.

Overrepresentation of Minority Students in EBD Programs

Using data from the US Department of Education (2006), analyses suggest that minority students are disproportionately placed in EBD programs. For instance, black children are 1.92 times more likely than white students to be labeled EBD (Losen and Orfield, 2002). These researchers suggest that stereotypes, racial bias in implementing discipline policies, and education practices that are culturally non-responsive may contribute to the overidentification and placement of many minority students. Minority students who exhibit EBD are often subject to low expectations, are educated in separate settings, and excluded from many educational opportunities. While minority populations are at great risk of living in poverty, Losen and Orfield refute the myth that racial overrepresentation in special education can be explained away by factors associated with poverty. This undoubtedly will continue to influence future educational programming for students in EBD programs.

Conclusion

Educating students with EBD is a complex endeavor that requires careful consideration and deliberate action. Those professionals who are dedicated to serving children and youth with EBD are constantly trying to identify and develop strategies and techniques that will help this population of students maximize their potential in school and beyond. There are ongoing efforts in the field of special education to define and assess in a better manner the disorder to intervene effectively and efficiently on behalf of students. There is also an emerging technology to prevent student placement in EBD programs and, when required, there are powerful techniques to teach replacement behaviors for those students who exhibit antisocial and maladaptive behaviors that preclude school success.

Notwithstanding the tremendous progress that has been made over the past few decades, some issues remain, such as

where best to serve students with EBD, policies about suspension and expulsion, placement in alternative educational settings, and the overrepresentation of students from minority racial and ethnic backgrounds. Despite these unresolved problems, education professionals continue to work tirelessly in an effort to serve this unique population.

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SOCIAL INTERACTION

Early Social Development and Schooling

Social Interaction and Learning

Peer Interaction and Learning

Peer Learning in the Classroom

Peer and Self-Assessment

Peer Relations and Socialization of Children and
Adolescents with Special Needs and Adolescents with Disabilities

Social Aspects of Collaborative Learning

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Early Social Development and Schooling

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Glossary

Conflict management skills – Conflicts are part of friendships between peers. Conflict management skills are associated with forming and maintaining friendships, and therefore with increased social understanding.

Context – The immediate setting, such as neighbourhood, school, and community, and different types of interpersonal relationships, that is, peers, family, and school-based.

Friendships – A special form of peer relationship when children engage in many more positive interactions with each other that are characterized by talking, cooperation, and positive affect, than they would with other peers.

Joint Attention – The ability to share attention with others.

Peer relationships – The degree that children are liked by children in the larger peer group, and to peer friendships, that apply to dyadic relations between two children.

Social Competence – A combination of effective use of social skills, absence of maladaptive behaviour, positive relations with others, and accurate, age-appropriate social cognition, or social understanding.

Social Development – A set of behavioural patterns, feelings, attitude, and understanding of the relationship to others that becomes apparent over time. It is the result of both intrinsic child characteristics and socialization.

Socialization – Guiding the child in such a way that reciprocal compliance, a child that is willing to be guided by parent directives and a parent that aims at fostering socialization, results in a social competent child.

Social play – Collaborative interactions of peers during play.

Social understanding – Accurate, age-appropriate social cognition.

Temperament – The whole of an endogenously organized personality trait that has a persuasive effect on the quality and frequency of social exchanges and interpersonal relations.

Transactional model – A continuous attunement between intrinsic child characteristics and elements in the child's environment, such as circumstances in the home, the school, the neighbourhood, and former life experiences.

Introduction

This article deals with social development, which refers to a set of behavioral patterns, feelings, attitude, and understanding of the relationship to others that becomes apparent over time. We consider social development as a result of transactions between child characteristics and environment. This transactional view on social development means that we look at social skills as abilities that develop during socialization. Processes of socialization are related to the child's parents and the cultural habits of the parents, and contextual influences, for example, family relations, and neighborhood. Social development starts at birth when the child's skills to share attention with others increases. The results of joint attention and increasing skills to use language allow the child to share actions and emotions with his caregivers. The child's interactions with caregivers gradually develop to more sophisticated verbal and nonverbal interactions. These allow the child to turn his attention to other adults and peers gradually. Both the results of socialization and the child's characteristics, especially temperament, add to increased social development. When the child goes to school, the results of socialization up to that point in time, and the child's achieved social skills further influence his social understanding to become a socially competent member of his culture.

The very first sign of social awareness is sharing attention. This capability is typically human as opposed to chimpanzees, and it refers to the first social behaviors that children show shortly after birth. The meaning of this skill is therefore the first topic that we present as one of the main elements of social development with regard to children aged 0–6 years. The other elements are development of peer interactions, social play, and social competence with regard to school. We based the choice for these essential factors upon extensive literature searches related to issues on social development. First, we define each of the items, and we describe recent theoretical insights, which are based upon recent findings of studies related to the theme. We consider temperament as a factor, which relates to all of the items, and we therefore present it in a separate paragraph. We will start with a historical overview of interest in social development to offer a frame for the article content, thereafter we present the elements of social development one after the other. In the conclusive remarks, we draw attention once again to early social development as a concept that is related to effective schooling.

Historical Overview of Interest in Social Development

Social development is the result of both intrinsic child characteristics and socialization. Both elements have received considerable attention over the years. The theoretical considerations and studies to test hypotheses derived from these theories reflect a growing insight in the way children become socialized given the genetic traits, and the environment in which they grow up. A first concept of socialization was that children are reinforced to form habits by their parents: As the child observes his parents, and as his parents deliver continuous feedback on intentional and nonintentional behavior while being together, the child develops increasing insight in how to behave. Later on, psychodynamic views came into focus. Children are active learners as they initially experience control by their parents but they gradually develop internal social control. This growing ability to understand social behavior, in turn, affects how they perceive social events. Studies on visualizing social behaviors showed that both parenting style and attachment affect socialization, and that the reciprocal nature of these factors leads to ongoing changes over time. Next, a new element of socialization came into view. This was the capacity to self-regulate, and it added a new series of studies to understand processes of socialization. It became clear that both child characteristics and environmental influences decide the outcome of socialization. Parents need to guide their child in such a way that reciprocal compliance, a child that is willing to be guided by parent directives, and a parent that aims at fostering socialization, results in a socially competent child. Consequently, research methodologies became more sophisticated to address bidirectionality in the study of social behaviors, especially with regard to the sequential properties of social interactions between child and parent. This sense of bidirectionality guides the description of the elements considered as main factors in early social development and schooling.

Main Factors in Early Social Development and Schooling

Joint Attention

The ability to share attention with others is a developmental task that precedes social competence. Behaviors that are indicative of the capacity for joint attention begin to emerge about 3 months after birth. Infants at that age already show visual preference for members of their own race compared to members of a different race. They also favor the sound of the native language when spoken to, since they tend to look longer at the person who speaks their language, and they are attracted to movements of the human face. More elaborated and differentiated forms of

attention develop in the next 15 months. The tendency to fixate social stimuli and to engage in social interaction is socially motivated: The child seeks a broader context that provides comfort, security, and satisfaction. Perceiving what another person is looking at facilitates referential communication, which includes three distinct skills of joint attention: responding to joint attention, or proto-imperative behavior; initiating joint attention, or proto-declarative behavior; and initiating behavior regulations. Successful joint attention is socially rewarding for the child, although individual children may differ in tendency to share positive affect with others. Moreover, eye contact marks awareness that others have powers of perception as well.

Joint attention is a skill that develops gradually based upon child and caregiver characteristics. Being motivated for interpersonal and emotional dyadic sharing is reciprocally rewarding, and the relationship between the child's daily social interactions and later social understanding is strong. Studies about joint attention by 12-month-old infants showed that the more frequent these children responded to, and initiated joint attention with an unfamiliar tester, the more often parents reported that their child showed optimal social competence at 30 months of age. As these results came forward even after excluding measures of cognition and language, it indicates that joint attention as a skill is an important predictor of later social competent behavior.

Studying joint attention is often included when investigating how children develop shared intentionality as part of cognitive development. In several studies, young children and chimpanzees have been compared with regard to the way they develop skills to share intentions. This information seems important to understand the meaning of developing joint attention for the human species. Four skills were compared between young children and young chimpanzees: The first one is gaze following and joint attention. Young children and chimpanzees know what others see, but only children attempt to share attention with others, and they know that they are doing this whereas chimpanzees do not. A second skill is that both young children and chimpanzees gesture in order to communicate with others, but only children understand its underlying cooperative motive. Group activity and collaboration can be observed with young children and chimpanzees, but only children actively encourage the adult to assist them to take part in the activity. Finally, social learning occurs only with young children and an adult as he or she demonstrates or teaches them. However, adult chimpanzees do not demonstrate things to their youngsters. Instead, the young animals observe and copy the adult's behavior. Joint attention as an expression of shared intentionality therefore, is "a direct expression of the biological adaptation that enables children to participate in the cultural practices around them" (Tomasello and Carpenter, 2007). At the same time, these cultural practices alert to child to "specific conditions under which the

built-in default assumption of universal knowledge and omniscient other minds must be suspended or inhibited" (Gergely *et al.*, 2007). Joint attention, therefore, is a first step in social referencing which develops gradually and is experience driven. Improved social referencing allows children to build peer relationships.

Peer Relationships

From a relational perspective, the child's early relationships with his parents initiate the child into a system of reciprocal and mutual interactions. These affect the child's connection to his parents and later on to his brothers and sisters, and to his peers. Three features of relational quality seem to be meaningful to successful socialization: warmth, security, and mutual reciprocity (Laible and Thompson, 2007). Secure attachment, or a positive relational quality between parent and child, predicts the child's competence in peer relations. As secure attachment is a main result of early parenting, adults play a significant role in the socialization of their child. Children become interested in peers throughout the second year. At first, these interactions mainly include looking, offering, and taking toys. By the 14th month, toddlers start using objects to lengthen the time of interacting, and to increase opportunities to reciprocal communication. During the pre-school years, children's improved opportunities to use language for communication with peers allow longer and more intensive interactions, which enhance the development of interpersonal understanding. This understanding characterizes peer relationships and it proceeds along four levels that can be observed when pairs of preschool children are invited to play together. The first level is that immediate will is pursued with little consideration for any other factors; unilaterally expressing one's own needs or wishes is the second level; then reciprocal strategies which includes coordinating perspectives through persuasion occur, and finally collaboration by developing mutual understanding of both partners' perspective shows up. Social sensitivity of preschool peers is not the same between pairs of children. A range of developmental levels occurs while watching preschoolers playing together. Moreover, children differ remarkably in the way they profit from each other's social developmental level.

Peer relations refer to peer acceptance, which is the degree that children are liked by children in the larger peer group, and to peer friendships, that apply to dyadic relations between two children. Core aspects of the dynamics of interaction processes in peer interaction are the child's effectiveness in social interaction, and his social power, or status of popularity. Both elements of peer interaction are reflected by sociometric status. Measuring a child's status allows expressions of the child's social competence: The children are nominated by their peers to derive scores for social preference and social impact.

Next, sociometric categories are computed to decide the category that a child belongs to. These are popular, rejected, neglected, controversial, or average. The findings of recent studies question whether sociometric status is an attribute of individual children. Studies on revealing how social development of rejected children unfolds over time show that rejected children who are not aggressive are less at risk for poor social development outcomes than their peers who are both rejected and aggressive. The same accounts for the other categories of sociometric status. Therefore, an increased emphasis on the fit of the child's characteristics in relation to the expectations of the larger group is taken into account in studies on identifying processes of peer functioning.

A special form of peer relationship is friendship. Children can have dyadic relationships with peers, but it is called friendship only when they engage in many more positive interactions with each other, and these are characterized by more talking, cooperation, and positive affect, than those of other peers. Friendships start early in childhood. Toddlers can be observed in showing specific interest in one child, and spending time with that child by frequent initiatives to share playthings, being close to one another, and share laughs and actions. During preschool, friendships show up in sustained coordinated play and role play. In kindergarten, playing together is still an important part of friendship but there are also more often verbal interactions. These are characterized by many positive and animated exchanges including sharing of preferred activities. Making and keeping friends requires several social skills, such as perspective taking, self-regulation, and understanding desires and beliefs of the other. Having friends is not a critical determinant of social competence, however, as it also depends upon the child's other close relationships in the family, or the level of stressfulness in the child's life. For children who grow up in unstable families, friendships often serve as socialization agents that are indispensable for healthy social development. School is an important place to develop friendships. Studies show that adjustment to school requirements is most important in the early school years "when classrooms are relatively self-contained and being able to interact effectively with a variety of peers is significant" (Gifford-Smith and Brownell, 2003). The role of context, therefore, is more important than earlier presumed.

Conflicts are part of friendships between peers. Conflict management skills are associated with forming and maintaining friendships, and therefore with increased social understanding. The skills develop from simple skills, which is insisting to one's own strategy or using a strategy that does not allow compromise and conciliation, to elaborate skills. In that case, a child reasons with his peer and attempts to compromise by giving the peer information about his perspective, and offering resolutions that the peer may find acceptable. A study with

5-year children from preschool showed that they use simple assertion and compliance as main strategies in a conflict situation. However, these strategies are situated: simple assertion is mainly used when the opponent insists, and compliance is used more often when the opponent uses a justification, or gives an alternative proposal. Children apply aggressive assertion when their opponent uses physical aggression. Conflict strategies are, however, part of the social skills that children develop while interacting with peers. Episodes of physical aggression decline over the period from 2 to 4 years of age. Use of aggressive behavior is, therefore, an expression of age-related behaviors that are part of becoming more socially competent. These skills are used in relationship to the peer they are interacting with. It follows that being able to develop relationships with peers allows children to enjoy playing together with peers, and to develop further understanding of one's own mind and that of others during social play.

Social Play

Social play refers to collaborative interactions of peers during play. The interactions are the result of productive engagement through the sharing of knowledge, and they provide opportunities to engage in role taking and social perspective taking. These activities lead to adjustments in inter-individual cooperation. As a result, children jointly develop rules that guide their activity, as peers are often approximately equal in status and competence during social play. Acquiring social skills that result in successful interactions during social play is primarily a developmental task. Social play develops from including social bids, such as smiling to the partner and smiling back, to role reversals in which children take over the role of their play partner, to pretend-play when children act as if, and finally, to meta-play when the children discuss the next step of a story line, and discuss changes of roles. The lowest level of social play occurs by 13 months, and the highest level can be observed from 30 months and onward. The more children are experienced to play with peers, the higher is their level of engagement in social play. There is also a significant effect of age with respect to length of sequences of social play. A longer history of shared social play leads to more successful role play. Moreover, child-directed play or free play in groups without external interventions leads to significant longer social play.

There are, however, individual differences in the degree to which children initiate social play, and are willing to take part in play. Child characteristics, such as temperament, and parental influences, for example, parenting style, and cultural background, influence whether and how children play together. Experience in social play also increases a child's ability to interact with peers while playing together. The more partners are involved

in social play, and treat it as a joint act and understanding, the more likely they will learn from it, resulting in positive adjustment, and consequently, improved social competence of each of them. By the time a child visits school 5 days a week, skills that allow him to understand and cooperate with peers and his teacher in the classroom offer opportunities to respond to social demands successfully.

Temperament

Temperament is visible from the child's earliest years. It is defined as the whole of an endogenously organized personality trait that has a persuasive effect on the quality and frequency of social exchanges and interpersonal relations. There are clear associations between temperament and immediate and later adjustment. Three dimensions of temperament are widely accepted: the first dimension is reactivity, which refers to irritability or distress to limitations, and distress to novelty; the second one is self-regulation consisting of effortful control of attention and of emotions; and the final one is sociability, or the tendency to approach novel situations. Temperament determines a child's adjustment as it is moderately stable over time. It contributes strongly to the development of abilities to cope with emotions; it directly and indirectly affects social behavior; it is an antecedent of collaboration quality, and is gender specific. Four models explain the developmental processes through which temperament affects social development. The first one is that temperament has direct linear effects on social development (e.g., since the child is upset easily by novel situations, he tends to withdraw from them; therefore, the child misses out opportunities to practice social skills that foster peer acceptance and play with peers). In the second model, temperament has an indirect effect on social development (e.g., the child's mother is distressed easily by novel situations, and consequently tends to keep her child away from these situations, which in turns affects the child's behavior toward novel situations). The third model refers to an interaction between temperament and social development, and includes a goodness-of-fit hypothesis (e.g., the child's mother is highly sociable while the child is easily distressed by novel situations. The possibility that the child is overexposed to situations that unnerve him is therefore big and affects the child's emotional stability in a negative way). A transactional model of the relationship between temperament and social development refers to a continuous attunement between intrinsic child characteristics and elements in the child's environment, such as circumstances in the home, the school, the neighborhood, and former life experiences. In these continuous and long-lasting transactions, temperament is either a risk or a protective factor for adequate social development.

Social Competence in School

The results of social development by the time that children enter preschool and kindergarten are reflected in skills that children apply in social interactions with peers and adults surrounding them. We refer to these skills as a part of social competence. Adequate social competence is defined as a combination of effective use of social skills, absence of maladaptive behavior, positive relations with others, and accurate, age-appropriate social understanding. Social competence refers to "a long term characteristic as opposed to social effectiveness which accounts for short term interactions mainly" (Steenbeek and Van Geert, 2007). Socially competent children succeed in integrating the behavior of the self with others during interactions, and they are able to self-monitor and correct errors during interactions. The higher a child's social competence is, the more positive his developmental outcomes are, since successful interpretation and response to other's affective communications, elicits positive interactions with peers and others.

School settings require specific skills related to social competence. These are engaging in prosocial interactions, regulating behavior to complement that of others, and delaying personal gratification. Moreover, children's relationships with teachers are less personal and intimate than those of their parents, and finally, evaluations of children's academic and social skills are ongoing (Wentzel and Looney, 2007). Social competence in school is related to the school as a context that affords skills to be and to become skilled as a social individual. An example of the relevance of context is that, especially for younger children, mixed age groups in preschool are beneficial in affecting their abilities to communicate, and to socialize with classmates. This advantage disappears by the age of 4–5 years. This suggests that older children profit more from same-age experiences than younger children, as these allow sharing of thoughts and activities that stabilize ongoing relationships with peers. Social competence, therefore, is an ability that is contingent upon opportunities and affordances that allow a child to become and stay socially integrated as well as self-assertive.

Task behavior is a specific form of social competence as it refers to being able to listen and follow instructions, show adequate behavior in the classroom, and staying task oriented. It is a skill that improves by practicing. It follows that children who have attended childcare are more experienced to interact with adults who are not their caregivers, tend to be more skilled to communicate with peers, and more easily show task behavior. Moreover, children who like school at the start of entering school are more receptive to the role of being a student, and they more often express behaviors related to being a good student, such as complying with classroom rules, and responsibilities as a student. Classmates are important sources of information about ways to be socially effective.

Teachers play a central role in structuring learning environments that afford social goals for the students in their class. Preschool programs that offer combinations of child-initiated and teacher-initiated programs are more successful in fostering social competence. Teachers that apply a combined approach in their classroom are more sensitive to children who are not yet able to self-regulate activities. These teachers compensate for differences between children, and promote social skills by teaching them explicitly to children who tend to avoid situations in which they are to use social skills. Teachers can promote social competence by educating children about emotions. They can tell stories in which the characters experience conflicts, invite them to use feeling words that express the character's feelings, and discuss strategies that regulate these feelings in appropriate ways to deal with the conflict.

Conclusive Remarks

This article dealt with social development as a set of behavioral patterns, feelings, attitude, and understanding of the relationship to others that become apparent over time. We described social development from a transactional developmental perspective to allow inclusion of both processes of socialization and of development of social skills. We identified four main elements in early social development starting at birth when the child's skills to share attention with others increases as a very first sign of social awareness. The other elements we presented were development of peer interactions, social play, and social competence related to school. We based the choice for these essential factors upon extensive literature searches related to issues on social development. As we considered temperament as a factor, which relates to all elements of social development, we described this child characteristic in a separate paragraph. In the final paragraph on social competence, we again emphasized the important role of context for social skills developing in the school.

See also: Children's Friendship; Social Aspects of Collaborative Learning.

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Social Interaction and Learning

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Introduction

This article is concerned with how learning and development are assisted by the interactions which take place in schools. More specifically, the focus is on the nature and significance of synchronous, face-to-face educational dialogs in classroom contexts. Psychologists and educators have gained from Piaget, Vygotsky, and the researchers who have extended their work, an affirmation of the value of social interaction for learning and development, whether it be interaction between peers of similar levels of understanding or between people more in the roles of learner and teacher (for reviews see Mercer and Littleton, 2007; Light and Littleton, 1999). Indeed, it has been suggested that any: “efficacious pedagogy should be a judicious mix of *immersion* in a community of practice and *overt focusing* and scaffolding from ‘masters’ or ‘more advanced peers’ who focus learners on the most fruitful sorts of patterns in their experience” (Gee, 2000: 201–202). Mindful of this, this article considers both how teachers use dialog to help children learn and develop their ability to reason and the processes through which knowledge and understanding can develop when learners talk and work together relatively autonomously in classroom settings.

How Teachers Use Dialog to Help Children Learn and Develop

Education is not simply a matter of an individual accumulating information; it involves the gradual development of new problem-solving skills and new ways of using language for representing knowledge and making sense of experience. It also entails the gradual induction by teachers of students into new perspectives on the world. Over the last 30 or so years much research has sought to understand how teachers use talk to guide learning and construct a shared version of educational knowledge – common knowledge (Edwards and Mercer, 1987) – with their students. Drawing on this body of work, Mercer (1995) suggested that teachers use talk to do three things:

- (a) *elicit knowledge from students*, so that they can see what students already know and understand and so that the knowledge is seen to be ‘owned’ by students as well as teachers;
- (b) *respond to things that students say*, not only so that students get feedback on their attempts but also that

the teacher can incorporate what students say into the flow of discourse and gather students’ contributions together to construct more generalised meanings;

- (c) *describe the classroom experiences that they share with the students*, in such a way that the educational significance of those joint experiences is revealed and emphasised. (p. 25–26)

Knowledge Elicitation and Questioning

When attempting to elicit knowledge from their students, in addition to using direct elicitations, teachers very commonly utilize a technique which Edwards and Mercer (1987) term cued elicitation. Cued elicitation is a way of drawing out from students the information that is being sought by providing strong visual cues and verbal hints as to what answer is required. While cued elicitation is often accomplished through asking questions, there has been considerable controversy in educational research concerning the use of questions more generally as a strategy for guiding the construction of knowledge. Specifically, there has been disagreement concerning the functions and value of this characteristic form of classroom interaction (see, e.g., Norman, 1992; Wells, 1999).

At one time it was common to find researchers criticizing teachers for using questions and for talking too much. It was claimed, for example by Dillon (1988) and Wood (1992), that because most teachers’ questions are designed to elicit just one brief right answer (which often amounts to a reiteration of information provided earlier by the teacher) this unduly limits and suppresses students’ contributions to the dialogic process of teaching-and-learning. There was criticism too of the characteristic three-part I–R–F (initiation–response–feedback) structure of classroom discourse. The IRF exchanges open with an initiation, usually in the form of a question, from the teacher which elicits a response from a student, to which the teacher typically provides an evaluative follow up or feedback. The suggestion was, as Skidmore (2006: 507) explains, that the I–R–F sequence results in a quiz which requires students to do little more than display their recall of knowledge got by rote and produces a pattern of teacher-led recitation which tends to reinforce the teacher’s authority as the transmitter of received wisdom and severely restricts the possibilities open to students to contribute thoughtfully to classroom talk.

However, most classroom researchers would probably now agree that such judgments were too simplistic. One reason is that critics did not fully acknowledge

teachers' professional responsibility for directing and assessing children's learning of a curriculum, and that it would be perverse not to rely on questions and other prompts to do so. Second, critics tended to assume that all question-and-answer exchanges were performing the same function. However, the forms of a language do not have a simple and direct relationship to their functions. In the classroom, teachers' questions can thus have a range of different communicative functions. They can, for example, be used:

1. ... to test children's factual knowledge or understanding ...
What is the nearest planet to the sun?
2. ... for managing classroom activity ...
Could we have all eyes to the board please?
3. ... and as a way of finding out more about what pupils are thinking ...
Why did you decide to have just three characters in your play?

Even the above account is an oversimplification, because any single question can have more than one function (e.g., the third question above could be used to find out what pupils know and to get them to attend). Also, a question takes on a special meaning in the context of ongoing events. Compare, for example, the function of asking for the name of the nearest planet to the sun before beginning a scheme of work on the solar system, with asking the same question after it is completed.

The key point is that there is a need to distinguish between form and function when analyzing and evaluating questions in teacher–pupil dialog: and one can only judge the function of questions, and any other forms of language, in dialogic context. With respect to the I–R–F while it can result in the learners' display of recalled knowledge, it can also be used creatively by the teacher to: help students plan ahead for a task they are about to carry out, or to review and generalize lessons learned from the tasks they have already performed (Skidmore, 2006, 507). The teacher's follow up, for instance, can be put to multiple uses – including clarification, exemplification, explanation, expansion, or justification of a student's response. It could also invite a student to do any of those things (Wells, 1999). So while teachers' questioning certainly can require children to guess what answer is in the teacher's mind, that is merely one possible function. Teachers' questions can also serve other very important functions in the development of children's learning and their own use of language as a tool for reasoning. They can: encourage children to make explicit their thoughts, reasons, and knowledge and share them with the class; model useful ways of using language that children can appropriate for use themselves, in peer group discussions, and other settings (such as asking for relevant information possessed only by others, or asking why questions to elicit reasons), and provide opportunities

for children to make longer contributions in which they express their current state of understanding, articulate ideas, and reveal problems they are encountering.

Responding to What Students Say and Describing Shared Classroom Experience

While unsuitable contributions to a classroom-based discussion may be rejected or ignored, one of the ways teachers engage with their students is to use incorporate their contributions into the ongoing teaching–learning process. This is accomplished through confirmation or repetition of things of educational significance (to underscore their salience to the whole class) and the elaboration of contributions to further explain or highlight their significance (Edwards and Mercer, 1987; Mercer, 1995). From a student's perspective, school work should ideally have a cohesive, cumulative quality in which specific activities and their goals can be seen to form part of greater whole, as part of a purposeful educational journey.

Research has identified a number of ways in which teachers try to create continuities in the experience of learners, for example, by referring to past events and implicating these in the joint construction of knowledge with their students. Teachers commonly use recaps to summarize what they consider to be the most salient features of a past event for the current activity (Edwards and Mercer, 1987; Mercer, 1995). Recaps can be literal, when a teacher simply sums up what happens (Last week, we began reading Macbeth) or reconstructive, the latter being where the teacher rewrites history, presenting a modified version of events which fits his/her current pedagogic concerns. Teachers also frequently use elicitations to help students' recall of past events (e.g., Who can tell me what they found out about the moon in the last lesson?). It is common too for them to mark past shared experiences as significant and relevant by using *we* statements (as in Remember when we looked at the map of Finland?). In these ways, teachers invoke common knowledge and highlight the continuities of educational experience, trying to draw students into a shared, cumulative, and progressive understanding of the activities in which they are engaged.

Alexander (2000), Crook (1999), and other educational researchers have argued that coherent knowledge and purposeful understanding will not naturally emerge for students from their continuous immersion in classroom life: it has to be pursued actively as a goal, through the use of appropriate teaching strategies. Talk with a teacher, and with other students, is perhaps the most important means for ensuring that a student's engagement in a series of activities contributes to their developing understanding of the subject matter as a whole. In order to understand how classroom education succeeds and fails as a process for developing students' knowledge and understanding, research is now beginning to focus on exploring the temporal

relationship between the organization of teaching-and-learning as a series of lessons and activities and how it is enacted through talk and joint activity (see for example, Mercer, 2008; Mercer and Littleton, 2007; Rasmussen, 2005; Scott *et al.*, 2006). The importance of cumulative, rather than simply extended, dialog is central to the notion of dialogic teaching (Alexander, 2004).

Dialogic teaching

Dialogic teaching is a concept which enables us to focus more precisely on the role of the teacher in classroom talk. The concept has emerged from the comparative, cross-cultural research of Alexander (2000). In some ways, classroom talk sounds very similar the world over; but Alexander's work suggests that there seem to be some, quite subtle, variations in the ground rules which normally apply. Even within countries, teachers can set up markedly different expectations among members of their class about how they should engage in dialog. The variation Alexander describes is not revealed by comparisons of the extent to which teachers use questions or other kinds of verbal acts: rather, it concerns more nuanced aspects of interaction such as the extent to which teachers elicit children's own ideas about the work they are engaged in, make clear to them the nature and purposes of tasks, encourage them to discuss errors and misunderstandings, and engage them in extended, linked sequences of dialog or chains of enquiry about such matters.

Dialogic teaching is that in which both teachers and pupils make substantial and significant contributions and through which children's thinking on a given idea or theme is helped to develop and move forward. It is intended to highlight ways that teachers can encourage students to participate actively in dialogs which enable the students to articulate, reflect upon, and modify their own understanding—and, conversely, how they may avoid doing so. Alexander suggests that dialogic teaching is indicated by certain features of classroom interaction: questions are structured so as to provoke thoughtful answers; answers provoke further questions and are seen as the building blocks of dialog rather than its terminal point and individual teacher-pupil and pupil-pupil exchanges are chained into cumulative, coherent lines of enquiry rather than left stranded and disconnected (Alexander, 2004: 32).

In terms of what the teacher actually does in classroom interaction, dialogic teaching can be characterized as that in which students are given opportunities and encouragement to question, state points of view, and comment on ideas and issues which arise in lessons; the teacher engages in discussions with students which explore and support the development of their understanding of content; the teacher takes students' contributions into account in developing the subject theme of the lesson and in devising activities which enable students to pursue their understanding themselves, through talk and other activity, and

the teacher uses talk to provide a cumulative, continuing, contextual frame to enable students' involvement with the new knowledge they are encountering.

Dialogic teaching is essentially a specification of good practice, derived from both theory of the nature of dialog (drawn from the work of Bakhtin, Vygotsky, and others) and observations of practice across a range of cultural settings. It has clear links, in both its origins and its nature, with some other concepts devised by educational researchers such as reciprocal teaching (Brown and Palincsar, 1989), contingent tutoring (Wood and Wood, 1999), dialogic enquiry (Wells, 1999), and dialogic spells (Nystrand *et al.*, 2003). As an educational concept dialogic teaching is both descriptive and prescriptive. It represents an approach to classroom teaching which: aims to be more consistently searching and more genuinely reciprocal and cumulative (Alexander, 2004: 1) than is usually observed in classrooms, anywhere in the world. Dialogic teaching is that which is collective, reciprocal, supportive, purposeful, and cumulative. It requires a teacher to orientate to the state of understanding of students, engage them in exchanges which will reveal the changing limits and possibilities of their developing interests and understandings, and adjust their communication strategies accordingly as classroom interaction progresses. It involves students taking an active, engaged role in both their own learning and that of their classmates; becoming explicitly part of a collective endeavor. It requires the creation and maintenance of the kind of dynamic intersubjectivity that Mercer (1995) has called an intermental development zone.

It is important to note that Alexander also suggests that some key indicators of dialogic teaching concern the ways in which children are seen to talk and work together in collaborative group settings and he particularly identifies the following as being important: children listen carefully to each other; they encourage each other to participate and share ideas; they build on their own and each others' contributions; they strive to reach common understanding and agreed conclusions, yet they respect minority viewpoints (Alexander, 2004: 33). This characterization of children engaged with each other and each other's ideas is juxtaposed with the seeming paradox of children being seen to work everywhere in groups, but rarely as groups.

Talking and Learning Together

While the study of children's group-based activity in school has had a relatively brief history, there has been a great deal of research interest in children's collaborative working, learning, and problem-solving in more general terms. It is clear that children's joint activity has been researched in diverse ways – for example, through large-scale surveys of life in classrooms; experiments in which pairs or groups of children work on specially designed

problem-solving tasks; and detailed analyses of talk between pairs or groups of children working on curriculum-based tasks in school.

Surveying Classroom Activity

Perhaps one of the first messages to emerge from work surveying classroom activity is that, at least in British primary schools, truly collaborative activity rarely happens. This was the conclusion of a large-scale research project carried out in the 1970s called ORACLE (Galton *et al.*, 1980). The ORACLE team of researchers, observing everyday practice in a large number of British primary schools, found that just because several children were sitting together at a table (as was common) did not mean that they were collaborating. Typically, children at any table would simply be working, in parallel, on individual tasks. This problem has also been underscored in a number of more recent studies, some of which have shown that even when children are set joint tasks their interactions are rarely productive (Galton *et al.*, 1999; Blatchford and Kutnick, 2003; Alexander, 2004, 2005). This tells us something important about the nature of everyday educational practice and leads to the conclusion that if simply left to their own devices to discuss something or talk together much classroom-based talk among children may be of limited educational value.

Experimental Studies

Much of the early collaborative learning research consisted of experimental studies of peer interaction which were designed to establish whether working and solving problems collaboratively was in fact more effective than working alone. Typically, children would be given the same task, but allocated either to working collaboratively or working alone, and their performance on the task assessed. Reviewing such studies, Slavin (1980) noted that cooperative or collaborative learning was often judged to increase students' academic achievement, self esteem, and motivation. These sorts of investigations gave rise to a related strand of research in which independent variables, such as the size of the group (e.g., Fuchs and Fuchs, 2000), group composition, with respect to, for example, gender and ability (e.g., Barbieri and Light, 1992; Howe, 1997; Webb, 1989; see also Wilkinson and Fung, 2002 for a review of work in this field), and nature of the task (e.g., Cohen, 1994; Light and Littleton, 1999; Underwood and Underwood, 1999) were manipulated and attempts were made to assess their effects. However researchers now tend to focus less on establishing parameters for effective collaboration and more on the ways in which factors such as task design or group composition influence the nature of collaborative interaction (Dillenbourg *et al.*, 1995; Littleton, 1999; Kleine-Staaran, in press). This shift to a more process-oriented kind of

investigation has brought with it an interest in the talk and joint activity of learners working together on a task, with attempts being made to identify those interactional features which are important for learning and cognitive change.

Many experimental studies of collaborative interaction have focused on how children talk together when they are working on a problem or task. In particular, correlational techniques have been used to establish whether there is evidence of an association between particular features of the learners' talk and on-task success or subsequent learning gain as indexed by individual performance on a posttest. For example, Azmitia and Montgomery (1993) found that the quality of children's dialog is a significant predictor of their successful problem solving. Studying children engaged in joint computer-based problem-solving tasks, Barbieri and Light (1992) found that measures of the amount of talk about planning, negotiation, and the co-construction of knowledge by partners correlated significantly with successful problem solving by pairs, and to successful learning outcomes in subsequent related tasks by individuals. Similar analytic techniques used by Underwood and Underwood (1999) demonstrated that for pairs of children working on a computer-based problem-solving activity those who were most observed to express opinions, analyze the situation in words, and express agreement and understanding achieved the best outcomes. Experimental evidence thus supports the view that focused, sustained discussion among children not only helps them solve problems but promotes the learning of the individuals involved. While this may seem like common sense, if it is so obviously true, one is led back to the question raised in the previous section of why high-quality peer discussion is not seen in many classroom contexts.

Researching Talk between Pupils in the Classroom

In the classic work *Communication and Learning in Small Groups* Barnes and Todd (1977, 1995) show how knowledge can be treated by pupils or students as a negotiable commodity when they are engaged in joint tasks. They suggest that pupils are more likely to engage in open, extended discussion and argument when they are talking and working with their peers outside the visible control of their teacher, enabling them to take more active and independent ownership of knowledge. Based on their in-depth observations, Barnes and Todd suggest that classroom discussion has to meet requirements for explicitness which would not typically be required in everyday conversation. Knowledge should be made publicly accountable – relevant information should be shared effectively, opinions should be clearly explained, and explanations examined critically. They also argue that the successful pursuit of educational activity through group work depends on learners sharing the same ideas about what is relevant to the discussion and having

a joint conception of what is trying to be achieved by it. These points have been supported by other research studies (Bennett and Dunne, 1992; Galton and Williamson, 1992; Kumpulainen and Wray, 2002; Mercer and Littleton, 2007).

What Counts as Learning?

Within the research literature on collaborative learning, there is considerable diversity in what is conceived of as learning and as a learning outcome. As indicated earlier, for Barbieri and Light (1992), Underwood and Underwood (1999) and others (such as Howe and Tolmie, 1999) learning is seen in terms of individual accomplishments, demonstrated through appropriate tests on individual children after group activity. Most of that research recognizes that the quality of talk and social interaction is a significant factor. However, the more radical possibility is that collaborative talk is not just a stimulant for individual thinking, but can itself be considered a social form of thinking. As some researchers have put it:

talk and social interaction are not just the means by which people learn to think, but also how they engage in thinking...[D]iscourse *is* cognition *is* discourse...One is unimaginable without the other. (Resnick *et al.*, 1997: 2)

This is a challenge to traditional, individualistic accounts of the nature of knowledge, and of learning. It implies that talk is not just the mediating means for supporting individual development, rather that ways of thinking are embedded in ways of using language. From this perspective, the accomplishment by children of particular forms of educated discourse is a valuable educational goal in its own right. This raises the possibility that how a learner engages and interacts with other learners may have a profound and enduring impact on their attainment and, indeed, on their intellectual development.

Supporting and Promoting Productive Interaction

Many opportunities for collaborative learning are fortuitous. They simply emerge as a consequence of being part of a particular community of learners. That said, we still need to understand how best to enable learners' joint endeavors, so that we can promote the most effective opportunities for collaborative learning and design strategies for optimizing collaboration. This concern is reflected in recent research, in which three factors have been given particular attention: task design; quality of relationships; and quality of talk.

Task design

When thinking about the issue of how to support productive group work many researchers have emphasized the significance of task design. It is important that group tasks

should be designed such that learners need to work together on them. Therefore tasks should not be too simple, for if each child can easily solve the problem or complete the task alone, then there is no imperative for joint working. Equally, if the task is too complex for the children, then they will struggle to create understanding and meaning. A group task is one which requires resources that no single individual possesses and is one in which students work interdependently and reciprocally – the exchange of ideas and information being vital to success (Cohen, 1994). It is perhaps not surprising, then, that some research suggests that open-ended, challenging tasks are more effective in facilitating productive interaction than more closed tasks focused on finding one right answer (Cohen, 1994; Van Boxtel *et al.*, 2000). This is in part because closed tasks more easily lead to one participant, perhaps, a more knowledgeable person, dominating the discussion (Arvaja, 2005). A clear task structure and provision of feedback is also important and this might be one of the best ways in which computer-technology can resource joint activity (Howe and Tolmie, 1999). That said, it is not simply a case of getting the task right. Of course, good task design helps: but because the meaning of educational tasks is created through interaction – task design is only part of the story.

Quality of relationships

According to Van Oers and Hännikäinen (2001: 105): "The main reason why discourses in collaborative learning processes ever lead to improved understandings is that the participants in the process are willing to share their understandings and keep on doing so *despite* their disagreements and conflicts... the fact that they can ever be productive at all relies on the fact that the participants in this process, for the time being, feel obliged to each other, stay with each other and maintain togetherness." This claim draws attention to the importance of the relationship between partners as they interact and work together. Researchers investigating how friendships mediate joint activity (e.g., Azmitia and Montgomery, 1993; Hartup, 1998; Youniss, 1999, Vass, 2003) have found that relational closeness is associated with the sharing of ideas, exchanging points of view, and a collective approach to challenging tasks. It seems that the development of close relationships, characterized by a sense of trust and mutuality, enhances learning (Howes and Ritchie, 2002; Underwood and Underwood, 1999). Findings such as these have led some researchers to argue that what is needed is a relational approach to group working, which properly recognizes that classroom learning is a social activity (Blatchford *et al.*, 2003). The suggestion is that training should be given to promote the development of close relationships between classmates, through among other things, developing interpersonal trust between the children – something which is often stressed in work

investigating collaborative activity in the creative arts (see Miell and Littleton, 2004). To this end, Blatchford and colleagues have developed an educational intervention program which they characterize as using a relational approach to the development of group working. Drawing on influences from attachment theory and studies of parent-child interactions, the program engages the participating children in activities designed to foster trust and mutual support and develop communication skills and joint problem solving. Evaluations of the program involving comparisons between experimental and control classes have indicated that this relational approach is not only successful in motivating children to participate in group activity and value it, but that it has a significant impact on their reading and mathematics attainment (Kutnick, 2005). Work by researchers such as Swann (1992) which highlights that some peer-based interactions are highly gendered and are characterized by dominance and asymmetry also add weight to the claim that for group activity to be effective children need to be taught to relate in positive ways.

Quality of talk

Other researchers, such as Mercer and Littleton (2007), suggest that children have to do more than engage with each other in a positive and supportive way; they also should become able to build constructively and critically on each others' ideas. It is their assertion that it is imperative to teach children how to use language to reason together. In collaboration with colleagues, they have developed Thinking Together, a classroom-based approach which places a special emphasis on the role of the teacher as a guide and model for language use, who fosters an inclusive climate for discussion while also enabling children to understand better how language can be used as a tool for thinking. It supports children in learning to talk in groups as well as providing them with opportunities for talking to learn. Through the systematic integration of both teacher-led interaction and group-based discussion children are helped to understand that aims for group activity and the use of spoken language are as much to do with high quality educationally effective talk and joint reasoning through exploratory talk, in which reasoning is accountable and visible, as with curriculum learning. The processes by which children learn how to learn are thus directly addressed, rather than being left to chance. The approach is more than delivering a particular form of communication skills training. It does encourage children to engage in particular ways of talking and working together, and they are explicitly guided in how to use language as a tool for reasoning together. They are encouraged to give reasons, seek clarification, ask questions, listen to each others' ideas, and so on. But children learn much more than a model set of talk strategies, and the goal is not that they will simply adhere to the ground rules for such talk. The main goal is children's active appropriation of

a particular educated way of talking and thinking, one that they understand and appreciate, so that in time they are able to apply, adapt, and develop their use of language flexibly and creatively in their discussions. Evaluations of the approach undertaken with children across a diverse age spectrum shows that teachers' encouragement of children's use of certain ways of using language leads to better learning and conceptual understanding (see Mercer and Littleton, 2007).

Concluding Remarks

There is certainly much more to discover about the ways that language experience in the classroom can contribute to the development of children's abilities to communicate, learn, and reason, but what is known now provides a well-informed basis for the creation of a more dialogic, and more effective, educational practice. It is an uncontroversial claim that through social interaction, children learn how language can be used to describe the world, to make sense of life's experience, and to get things done. However, what children learn from talk in the classroom, and how significant it is for their psychological development and educational progress, will depend a great deal on the range and quality of the dialogs in which they engage.

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See also: Peer Learning in the Classroom; Social Aspects of Collaborative Learning.

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Peer Interaction and Learning

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Introduction

In the broadest sense, situated peer learning can unfold in any human interaction between peers, children, or adults, when different viewpoints emerge against a backdrop of social equality and active participation. In the adult world, it may involve interaction between a lay person and a professional (learning new software on the computer), friends or acquaintances (exchange of recipes), and be either planned or unplanned (college students tutoring in math vs. casual conversation between friends). In a parallel fashion, peer learning in the world of children can take many forms, some institutionalized, as in group work in classrooms and labs, and others in natural settings, as in interaction between siblings in the family or between friends in preschool or school. From the educational perspective adopted here, the discussion of research on peer learning encompasses both the sites of children's natural habitus, as in ethnographic studies of socialization, and those of the more formal settings of schools, as in educational-psychology studies of peer collaboration. Included in this spectrum are children and young people of all ages, from kindergarteners to young adults.

Research on peer learning encompasses a wide variety of interests, including language, social skills, many subject matters at school, and more. Peer learning has been studied both experimentally and through participant observation of naturally occurring interaction; it has been of interest to scholars coming from at least four research traditions: (1) studies in cognitive psychology, focused on cognitive development, that have generated an abundance of experimental studies of the relative benefits of peer learning compared to child-adult learning (for a review see Garton, 2004; O'Donnell and King, 1999); (2) the educational psychology tradition, within which child collaborative learning has been widely adopted for its effectiveness in promoting subject-matter achievement, in math and science (e.g., Schwarz *et al.*, 2000); (3) the cross-cultural psychology approach to socialization, based on which researchers have studied the role of siblings in patterns of child-rearing in different communities around the world (Rogoff, 2003); and (4) the linguistic ethnography tradition, with its focus on the ways in which peer talk functions in children's acquisition of discourse skills and the co-construction of peer culture (e.g., Goodwin, 1990).

The methods used in these studies follow two major methodological groups or some combination thereof. The first group, mainly representing the cognitive approach in

the psychological and educational traditions, is often carried out in classroom settings during the academic year, and is based on classic pretest-posttest experimental design, with clear hypotheses and measurable outcomes (Calhoun and Fuchs, 2003). The second group, representing the sociocultural and language socialization approach, consists of studies in which the basic data consist of transcripts of natural talk among children; data analysis tools draw from both discourse-analytical and quantitative traditions, and the focus of analysis is on process rather than outcome (see Kyratzis, 2004 for review).

Studies of peer learning also vary in terms of the context of the situation focused on, age of participants, and domain studied. Structured contexts, such as classrooms, have been studied much more extensively (for review see Fuchs and Fuchs, 2005) than nonstructured ones, such as peer interaction among siblings in the family or talk among young peers in preschool (for a review see Blum-Kulka and Snow, 2004). Age of participants studied varies from young preschoolers to school-age children (for review see Ginsburg-Block *et al.*, 2006), high school (Schwarz *et al.*, 2000) and college students. Interests shift with age: in studies of young children, the focus is often on language-linked domains, such as second-language literacy and discursive skills (Blum-Kulka and Snow, 2004; Cekaita and Aronsson, 2004), whereas with school age the interest shifts to the learning of subject matter, such as math and science (King *et al.*, 1998), history, and social skills (Ginsburg-Block *et al.*, 2006). The overall conclusion from all the studies is that peer learning is a highly effective mode of learning.

Theoretical Underpinnings

The effectiveness of peer learning can be grounded in at least four theoretical perspectives on learning. From a Piagetian perspective, the learning process at large is triggered by states of cognitive conflict between what is understood and what is encountered in active interaction with and manipulation of the environment. Peer interaction promotes such cognitive conflict by exposing discrepancies between different participants' level of knowledge, resulting in a state of disequilibrium. Through dialog and discussion among individuals of equal status – as in peer interaction between children unhindered by the status and cognitive superiority of adults – a higher level of understanding evolves, cognitive change occurs,

and equilibrium is restored. This is regarded as an internal process, which then manifests itself in behavior (an inside-out theory Garton, 2004). Studies grounded in a Piagetian constructivist framework have largely supported this view by showing experimentally that working with a peer leads to greater cognitive benefit than working alone (Garton, 2004).

From a Vygotskian perspective, social activity at large is important as the primary site in which concepts are formed, before they become mental functions for the individual. Cognitive development depends on active social interaction, including reasoning and explanation, with a more-competent partner. The interaction unfolds presumably within the novice's zone of proximal development, namely with one of the participants entering the interaction with an initial gap in knowledge that can be closed in interaction with the more expert partner. The expert is considered as having responsibility for providing the appropriate support or guidance (scaffolding) to fit the novice's zone of proximal development. In his view, a child may learn more when interacting with a peer at a similar age than when interacting with an adult, due to the fact that they are both operating within one another's proximal zones of development, and can change roles as novice and expert, providing each other with appropriate scaffolding on different occasions. As a result of the process, a shared, intersubjective understanding is co-constructed from the participants' differing viewpoint which in turn is internalized by all participants (an outside-in theory Garton, 2004). The Vygotskian framework has been evoked to explain gains in peer learning in both experimental (e.g., Fawcett and Garton, 2005) and natural settings (e.g., Nicolopoulou and Richner, 2004). In line with the zone of proximal development (ZPD) idea, it has been shown that small differences in cognitive level between children were more effective than large differences (Kuhn, 1972).

More recent theories of situated learning (Lave and Wenger, 1991) take the Vygotskian argument further, claiming that all learning is quintessentially social. In this view, learning is a process of participation in communities of practice, participation that is at first legitimately peripheral but increases gradually in engagement and complexity. Legitimate peripheral participation (LPP) theory alters the locus of learning. It is not the individual mind that acquires mastery, since learning is a process that presumably takes place not in an individual mind, but in a participation framework. The shift in focus toward the socially constituted nature of learning resonates in cognitive theory that views thinking as a socially distributed process, with knowledge emerging from the language-mediated collaborative activity of several participants (Resnick *et al.*, 1991).

A fourth tradition, coming from social psychology, locates the locus of learning in the motivational factors

explaining the interaction between the individuals in the group (Slavin, 1996). Here, the interest in peer learning is restricted to certain forms of cooperative learning in school, and not to peer learning at large. The central process this theory emphasizes is the structure of the reward or goals under which the student operates (Slavin, 1996). The reward is given to the group as a whole, making the individual interest and the group interest as one. This kind of reward structure motivates the group members, not only to maximize their abilities, but also to help others in the group to do so. The most effective structure is attained when the group is rewarded based on the individual learning of its members. This procedure is intended to make group members more accountable, and to that end avoid social loafing. A related conceptualization emphasizes the importance of social cohesion, claiming that the reason the group's interest has been served by its members is not motivational, but rather emotional, building on the members' wish to help each other (Sharan, 1994). Though there is no one-to-one correspondence between theory and research tradition, in general terms, the cognitive approach tends to be associated with Piaget, while the sociocultural approach is affiliated with Vygotskian and situated-learning theories.

Peer Learning in the Cognitive Tradition: Empirical Evidence

In educational psychology, peer learning has been referred to by various terms, such as collaborative learning, cooperative learning, peer-assisted learning, and peer tutoring. It is beyond the scope of this article to enlist the conceptual differences between all these terms, and we shall focus instead on two often-cited definitions. Collaborative learning, in its radical version, "involves learners working together in small groups to develop their own answer through interaction and reaching consensus, not necessarily a known answer" (Ehrlich, 2002). Monitoring the groups or correcting "wrong" impressions is not the role of the trainer since there is no authority on what the answer should be.

Cooperative learning, on the other hand, is geared toward solving problems with right solutions. It has been defined as "classroom techniques in which students work on learning activities in small groups and receive rewards or recognition based on their group performance" (Slavin, 1980: 315). Three distinct types have been identified – information learning, formal learning, and study teams – varying in terms of the length of the task required to be done together, a parameter that affects the degree of involvement and relationship within the learning group (see Nastasi and Clements, 1991 for review).

The majority of the empirical studies conducted in education and psychology used a strict pre-post experimental

model, mostly in the field (though some were held in laboratories), with a very similar structure:

1. Children who are a representative sample of the population (that can be different from one study to the other in age, learning abilities, and so on) were randomly assigned to the control or experimental group; sometimes, this process is dependent on the child's scores in school.
2. A measure of the specific educational field, usually by standardized tests.
3. Applying the intervention that varied from one study to the other in a given length of time, the level of structuring in the assignment the dyads/groups receive, differences in children's academic level, and so on. The condition in the control group is also varied: in some studies, the children in the control group carry on with the original educational program of the school; in others, there is a different intervention, such as studying in small groups with close supervision/guidance of the teacher, which has been compared to peer learning.
4. Testing the children again in the same standardized test.
5. Testing to see a significant statistical improvement following the intervention, in comparison to the control group.

This approach, which uses a very specific outcome and a very specific definition for the effect of peer learning, has advantages as well as disadvantages. On the one hand, it is easy to establish the child's gains from peer learning and to identify improvement and the necessary conditions for it. On the other hand, we may be missing data that will help explain the ways in which peer learning works. Research in this tradition has become increasingly sensitive to the role of verbal communication during peer learning, either by including a +/-talk condition in the experimental design (Fawcett and Garton, 2005), or more frequently, by assessing the quality of discourse during peer interaction (see Nastasi and Clements, 1991 for review).

The effectiveness of peer learning has been demonstrated in many curriculum areas as well as in social and communication skills. In the child's early years, the main focus in the literature revolves around reading and writing abilities. Studies conducted as early as in kindergarten found that peer-assisted learning strategies (PALSS) have a beneficial effect on reading vocabulary and comprehension, decoding skills, and writing (Fuchs and Fuchs, 2005). These findings were significant over and above the impact of the child's socioeconomic background and his initial level (high vs. low).

The effects of peer learning on mathematical skills were assessed for both elementary and high school students. Overall, peer learning was found to have a

positive effect on the child's mathematical abilities. Studies conducted in elementary school showed that peer learning helped students generate conceptual mathematical explanations and helped high-achieving students' performances on complex mathematical tasks (Fuchs and Fuchs, 2005) and improved students' grades in both curriculum-specific tests and standardized tests (Slavin, 1980).

Studies on elementary schools have also shown that interventions that focus on academics can also improve social skills. PALS encourages making new friends among children who are less popular (Fuchs and Fuchs, 2005), promoting the social acceptance of children with handicaps (see Nastasi and Clements, 1991 for review) or intellectual disabilities (Yarrow and Topping, 2001), and improving social and self-concept. Those, in turn, are correlated with high academic scores (Ginsburg-Block *et al.*, 2006).

The number of studies conducted on high school students is significantly lower than the studies done in elementary school. Obviously, there is not much work on reading and writing. The main focus in high school is mathematical skills and social skills. Peer learning increases mathematical reasoning and understanding. The positive effect of peer learning for mathematics has been attributed to the peers' inquiry and raising of questions (King *et al.*, 1998), discursive practices which require the student to explain and defend his opinion (Schwarz *et al.*, 2000).

Peer learning also improves the adolescent attitude toward school, the dropout rate, and their self-concept (Raswal *et al.*, 1995). More recent studies are trying to assess the interaction between the learning method and the student's basic needs and personality (Hänze and Berger, 2007).

Peer learning has also been convincingly shown to be beneficial for special education students. In this case, studied extensively, peer learning proved to be beneficial from kindergarten to high school. It improved the reading abilities of the child, mathematical abilities (Calhoun and Fuchs, 2003), and social skills (Yarrow and Topping, 2001). These findings are valid for children with emotional and behavior disorders as well (Ryan *et al.*, 2004).

Peer Learning in Sociocultural Tradition: Empirical Evidence

One of the basic tenets of sociocultural theory is that children are active agents in their own socialization, learning language and culture through participation in linguistically marked meaningful events. The perspective on learning in this approach is conceptualized as becoming competent participants in communities of practice, as entering new worlds of discourse, rather than as just acquiring new skills and concepts. From this viewpoint, peer interaction is the essential condition for peer learning. Peer (and sibling) interaction is viewed as crucial for the

development of cognitive and linguistic skills, including pragmatic skills. As in all ethnographic and cultural approaches to development, the focus of the observation is on the process of the interaction in its potential contributions in the wider sociocultural context, rather than on measurable gains. Arguably, the outcomes of children's interactions need to be viewed in terms of their contributions to children's co-construction of their social identities and peer culture, as well as in terms of their cognitive and linguistic gains. Two major contextual features of peer interaction can be considered conducive to learning in this site: (1) its collaborative, multiparty, symmetrical participation structure and (2) its shared worlds of childhood culture. Peer interaction unfolds unhindered by the inherent asymmetry of adult-child interactions and hence presumably can promote a free and reciprocal exchange of ideas; the specifics of peer-group participant structure allows for reciprocity in expert-novice configurations with shared trajectories of ZPDs, inviting momentary teaching-learning opportunities in different domains, ranging from the use of computers to language learning (Blum-Kulka and Snow, 2004; Rogoff, 2003).

Evidence in this approach for the essential role peer interaction plays in socialization comes from three domains of study: (1) cross-cultural, ethnographic studies of socialization across cultures; (2) second-language learning studies; and (3) linguistic ethnography studies.

For many centuries and even in recent times and in diverse cultures, children have been acting as the major agents of socialization. In these societies, the care of toddlers is entrusted to their older siblings, as is the case for Polynesian children, Mayan children in Mexico, or African-American children in Louisiana, offering them ample opportunities to learn varied aspects of social behavior – from how to help with household chores to how to manage conflicts and compromises. Simultaneously, older siblings are young children's primary source of linguistic input, and have also been shown to engage in direct language teaching, as in the case of African-American children in Louisiana who taught their younger siblings to recite the alphabet, play word games, and name colors and numbers; the African-American girls in Piedmont who engaged younger children in word play, counting and naming body parts; and the American-Israeli bilingual teenagers who engaged their younger siblings in bilingual word play (Blum-Kulka and Snow, 2004; Heath, 1983; Rogoff, 2003).

Peer interaction is essential for second-language learning. For immigrant children, in many countries whose home language is different from school language, school experience is the major resource for learning the target language. Depending on the type and quality of educational support given, interaction with native peers may prove crucial in the process. Once immigrant children have acquired the rudiments of communication in the second language, their native peers willingly engage them in

talk and play, enhancing indirect language learning, and also act as explicit language teachers, correcting pronunciation and teaching vocabulary (e.g., Tabors *et al.*, 2000). From a theoretical viewpoint, the case of immigrant children can be considered a prime example for learning through legitimate peripheral participation; from an initial silent position at the periphery of their peers' participation structure, they move with time (and confidence in second language) to the center of this structure, aided in the process by their native peers. Second-language learners in immersion classrooms with limited second-language proficiency recurrently employ language play in conversations with peers, a speech genre which generates extended repair sequences serving as informal language lessons (Cekaita and Aronsson, 2004). Studies that show scaffolded help provided by peers include Japanese and American immersion preschool and kindergarten classes, British bilingual classrooms, and English as second language (ESL) classrooms (Kasper and Rose, 2002).

Linguistic ethnography studies of children's peer talk reveal that deep involvement in shared worlds of childhood culture creates interest and motivation, facilitating peer interaction and presenting rich opportunities for the mutual learning of a wide range of cognitive, social, and discursive skills, such as: the intersubjective skills of following collaboratively constructed complicated plots of pretend play (Sawyer, 1997); negotiating power asymmetries and gender identities in same-sex and cross-sex groups (Goodwin, 1990); practicing and refining their narrative skills, and developing child peer culture through narration (Maybin, 2006; Nicolopoulou and Richner, 2004); fostering conversational skills (Hamo and Blum-Kulka, 2007); and developing cultural styles of negotiation (Corsaro and Rizzo, 1990).

Summary

Peer learning emerges from this article both as an educational framework for a variety of educational practices (tutoring, collaborative learning, cooperative learning, etc.), as well as an interactional framework fostering learning in many forms of life. Theoretical interest in the field has a long and well-established history, going back to the two pillars of developmental psychology, Piaget and Vygotsky. The educational domains where peer learning has been shown to be effective include school subjects like mathematics, history, and literature, as well as social skills and self-confidence. Yet, research shows that the degree of success achievable with peer learning can depend on a host of contextual features, including age, gender composition, level of group heterogeneity, degree of task structuring, quality of interaction, and type of reward (Ginsburg-Block *et al.*, 2006; Jacob, 1999; Slavin, 1980). The gains and affordances of PL in natural settings are manifest in sibling care in traditional societies, second-language acquisition by

young children, and child-to-child talk in various contexts. Traditionally, in the cognitive tradition, gains are evident mainly by measurable outcomes; in the sociocultural tradition, gains are evident by close scrutiny of the interactional processes. Yet, research on peer learning has also seen a growing cross-over from sociocultural to cognitive approaches in fields traditionally associated with the latter, like mathematics education; embracing discursive approaches to research on math education entails replacing the language of personal acquisition by talk about learning as becoming participants in a collective activity, accompanied by detailed descriptions of the learning process backed by transcripts of student interactions (Kieran *et al.*, 2003). Arguably, the common denominator in all cases considered is communication: peer learning, whether planned or unplanned, institutionalized or natural, unfolds mostly through talk. It follows that the quality of talk is an essential component of its potential success. Indeed, several educational studies have shown that engagement in verbal pre-planning, active debate, explicit negotiation, listening to each other's explanations and arguments, and reflection on their logical consistency while working on tasks with peers is positively associated with individual cognitive gains on posttests (e.g., Barbieri and Light, 1992). The role of verbal active exchange of ideas as a key (if not the key) element of effective peer learning has been recognized by at least some researchers in the cognitive tradition, and has led to a rising emphasis on transcripts as a major source of data, and to some application of discourse-analytical methods to pinpoint the discursive strategies fostering learning (e.g., Fawcett and Garton, 2005; Jacob, 1999; Asterhan and Schwarz, 2009). Attention to language and discursive practices as primary to the inquiry of issues of socialization and development has been essential to most research in the sociocultural tradition; for some, like in the study of argumentation, the nature of the argumentative dialog is taken to be the very essence of the learning process (Pontecorvo and Girardet, 1993); for others, peer talk is conceived of as providing affordances for learning in a broad spectrum of domains and skills, leading to cultural, social, linguistic, and cognitive gains.

See also: Cognition and Emotion.

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Peer Learning in the Classroom

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Peer Learning in the Classroom

Recognizing that students can learn by working with and helping each other, school districts, state departments of education, national research organizations, and curriculum specialists recommend, and sometimes mandate, the use of peer-based learning. Undergirding these recommendations is a large research literature showing positive effects of peer-based instructional methods on student achievement, compared with other forms of instruction that involve little interaction between students such as teacher-led whole-class instruction or individual work.

However, simply placing students in small groups does not guarantee that learning will take place. Rather, the extent to which students benefit from working with other students (variously referred to as cooperative learning, collaborative learning, peer tutoring, and peer-based or peer-directed learning) depends on their interaction. This article explores the mechanisms by which working with other students is thought to benefit student learning, and the many ways in which small-group work might be orchestrated to bring about those benefits.

Social–Behavioral Perspectives on the Benefits of Peer Interaction

Social–behavioral perspectives hypothesize that working together, helping each other, and supporting each other's contributions will lead to increased effort, greater learning, and more liking of the task and other students than instructional settings without such opportunities for student interaction.

Motivational Perspectives

One way to motivate students to collaborate is to have groups work toward a common goal (Deutsch, 1949). In a group or cooperative goal structure, group members can attain their own personal goals only if the group is successful. A group goal may be based on rewards or incentives. In Slavin's (1992) Student Teams-Achievement Divisions (STAD), for example, teams are rewarded based on the improvement of group members' achievement. Since the team's success depends on the progress of all group members, these group rewards ensure individual accountability, a feeling of personal responsibility for what happens in the

group. This motivates students to work hard toward the group goal and encourage and help others do the same.

To limit undue focus on the reward itself and maintain focus on learning and task performance, the group incentive (e.g., a team certificate or a mention in a classroom newsletter) is not designed to be highly desirable or have high stakes. To ensure student effort and reduce pressure on less-capable group members, task difficulty is tailored to the capabilities of individual team members and no one is assigned overly difficult tasks. Cooperative learning methods that use both group rewards and individual accountability show positive effects on achievement compared to cooperative learning methods that include only one or neither of these components.

Social Cohesion Perspectives

Creating socially cohesive groups is also thought to motivate students help each other because they care about the group and its members. To promote a sense of group identification and concern for others, some cooperative learning methods, for example, Johnson and Johnson's (1994) *Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning* uses teambuilding and development of social skills. Teambuilding activities help students get to know each other and experience success as a team. Training in social skills such as active listening, stating ideas freely, accepting responsibility for one's behaviors, taking turns, sharing tasks, making decisions democratically, and trying to understand others' perspectives helps group members trust, accept, and support each other, communicate accurately and effectively, and resolve conflicts constructively.

Another way to build group cohesion is to provide feedback on group functioning. By discussing their respective group's interaction and how they might improve it (group processing), groups can identify and solve general communication problems (e.g., disruptive or bullying behavior) and reinforce each other's collaborative efforts.

Cognitive/Developmental Perspectives on Learning from Peers

Piagetian Perspective

According to Piaget (1932) and his followers, cognitive conflict leads to higher levels of reasoning and learning. The conflict arises when learners perceive a contradiction

between their existing understanding and what they hear or see in the course of interacting with others. To resolve the conflict, learners reexamine and question their own ideas and beliefs, seek additional information, and try out new ideas. Exchanges with peers are more likely to promote learning than exchanges with adults because students are more likely to cooperate as equals and challenge each other, exercise mutual control over the interaction, and share each other's language and point of view.

Supporting evidence of the benefits of cognitive conflict comes from research on the cognitive development of pairs of children working on conservation tasks to discuss whether some characteristics of objects (e.g., the volume of liquid) remain the same when others (e.g., the width or height of the container) change. When children who have not yet learned the principle of conservation are paired with children who have mastered it, the former often gain whereas the latter rarely regress to giving nonconserving responses. Moreover, pairs of nonconservers progress when they hold conflicting, but still incorrect, ideas, but not when they hold the same incorrect conception. Benefits of resolving conflicting perspectives also appear in studies of larger groups in which students initially hold different conceptions.

Vygotskian perspective

According to Vygotsky (1978), learning can occur when a more-expert person helps a less-expert person. With the help of a more-skilled person, a process of negotiation and transformation enables the less-competent person to carry out a task or solve a problem that the latter student could not perform without assistance, a process sometimes referred to as scaffolding or guided participation. Through this process, the less-proficient student can internalize skills and knowledge that he/she has practiced and developed such that they become part of his/her individual repertoire.

Students can often provide effective scaffolding and support due to their understanding of, and familiarity with, each other's misunderstandings and their ability to explain concepts in familiar terms. Students being helped will benefit most when they have, and use, opportunities to apply explanations received to solve the problem or carry out the task for themselves.

Co-Construction of Knowledge

Students can also learn by co-constructing knowledge with their peers, for example, when students contribute different pieces of information or build upon others' explanations to jointly create a complete idea or solution. Students can collaboratively build knowledge and problem-solving strategies that no group member has at the start by acknowledging, clarifying, correcting, adding to, building

upon, and connecting each others' ideas and suggestions. Such interactions have been shown to help children co-construct and internalize strategies and concepts in a wide variety of areas including, for example, identifying chemicals in chemical reactions, understanding of place value, learning how to multiply numbers, and constructing mental models of the nature of matter.

Co-construction may require a high degree of coordination among group members. In highly coordinated interaction, students acknowledge each other's ideas, repeat others' suggestions, and elaborate on others' proposals (Barron, 2000). Speakers' turns are tightly connected, and group members pay close attention, and respond, to what other members do and say, give space for others' contributions, and monitor how the unfolding contributions relate to the problem-solving goal.

Cognitive Elaboration Perspective

From a cognitive elaboration perspective, interacting with others may encourage students to restructure their own knowledge and understanding. Specifically, explaining the material to others may promote learning by encouraging explainers to rehearse information, reorganize and clarify material, recognize misconceptions, fill in gaps in their understanding, strengthen connections between new information and previously learned information, internalize and acquire new strategies and knowledge, and develop new perspectives and understanding. When formulating an explanation, students may think about the salient features of problems and generate self-explanations that help them internalize principles, construct specific inference rules for solving problems, and repair imperfect mental models (Chi, 2000). This process may help students monitor their own understanding and develop a metacognitive awareness of what they do and do not understand.

The social component of explaining to others is important. Consistent with the idea that the process of explaining to someone else leads to more differentiated, complex, unified, and organized cognitive structures than does merely learning the material for oneself are findings that vocalizing to a peer (presumably to teach that person) produces greater concept attainment than vocalizing to an experimenter (presumably only to demonstrate mastery of the material). By accommodating explanations to the difficulties of other students, helpers may construct more elaborate conceptualizations than they would when solving the problems for themselves.

The strong relationship between giving explanations and achievement in small groups has been well documented (Webb and Palincsar, 1996). Moreover, giving more-elaborated explanations may be more effective for learning than giving less-elaborated explanations, for example, providing multiple reasons versus a single reason about the role of resistors in electric circuits.

Debilitating Interpersonal Processes

Groups may not function in ways that are optimal for learning. A number of detrimental processes have been documented.

Unequal Participation

Some students participate more than others due to personality characteristics (extroverted and energetic members may do most of the talking) or status characteristics. High-status students, especially on academic standing or popularity, tend to be more active and influential than low-status individuals, while low-status individuals tend to be less assertive, talk less, and give fewer suggestions and less information than high-status individuals. Both real and artificial differences in task-related competence (e.g., classifying students' competence on the basis of fictitious test scores) can create imbalances in activity and influence. Status may also be linked to social characteristics, such as gender or race, with boys and white students being more active than girls and colored students.

Sometimes, students choose not to participate. One or more group members may sit back and let others do the work (referred to as social loafing or diffusion of responsibility). Individuals may go along for a free ride if they believe that their efforts cannot or will not be identified or are dispensable. The free-rider effect can turn into the sucker effect when the group members who were doing all of the work discover that they have been taken for a free ride and stop working to avoid being suckers.

Students who are not involved in group interaction will not experience the benefits of active participation described earlier. Students who do participate will not benefit from the knowledge and perspectives of the passive students.

Many cooperative learning methods encourage participation of all group members. In *The Jigsaw Classroom* (Aronson *et al.*, 1978), students are assigned responsibility for mastering a portion of the material, discussing that material with other students assigned the same topic, and teaching their topic to the other members of their groups. The group-investigation method by Sharan and Hertz-Lazarowitz (1980) requires students to carry out research on a piece of a group project and then work together as a team to integrate their findings and plan their class presentations.

Failure to Seek and Obtain Effective Help

Another set of debilitating processes concerns the failure of students to seek help when they need it or to obtain effective help when they seek it. Students may fail to seek help because they lack the metacognitive skills necessary to monitor their own comprehension, or may watch their

teammates solve a problem or accomplish a task and assume that they can do it too (Nelson-Le Gall, 1992).

Students may decide not to seek help for fear of being judged academically or socially incompetent, or they may not want to feel indebted to those giving the help (Newman, 1998). Alternatively, students may believe that help seeking is undesirable (as a result of classroom norms to be quiet and work alone without disturbing others) or may have received antagonistic or unsatisfactory responses to previous help-seeking attempts. Students may believe that no one in the group has the competence or resources to help, or they may lack a sense of responsibility or motivation to do the work. Finally, they may believe themselves to lack the competence to benefit from help that others may provide.

Even if students do seek help, their help-seeking strategies may be ineffective. Students may select helpers who are nice or kind, or who have high status, rather than those who have task-relevant skills. Conversely, they may ask vague, indirect, or unfocused questions, which are not likely to elicit explanations, rather than questions that are explicit, precise, direct, and targeted to a specific aspect of the problem or task. Asking precise questions makes it easier for other group members to identify the student's misconceptions or areas of confusion and formulate effective help accordingly. Precise questions may also signal to the group that the help seeker wants to learn, and has sufficient understanding to be able to profit from explanations provided, and thus motivate the group to help. General questions, in contrast, may signal a lack of ability or of effort (it takes less effort to declare general confusion than to formulate precise questions), or both. Students who appear to be loafing or who give up easily may be less likely to receive help than those who appear to be working hard.

Even if students are willing to help their teammates, they may not have the skills to provide effective explanations. Help givers may have misconceptions themselves, not be able to translate their thinking into appropriate language, use confusing language, not provide enough detail, dictate how to solve a problem or complete a task without referencing the needs of the help seeker, or they may not monitor other students' comprehension and thus be unaware of specific misconceptions that need to be addressed.

Whether students obtain help may depend on the group's composition and a student's relative position in the group. For example, in groups that are academically heterogeneous, middle-ability students may be left out of teacher-learner relationships that emerge between high-ability and low-ability group members.

Too Little or Too Much Cognitive Conflict

Although students can learn by resolving discrepancies in ideas, too little or too much conflict may be detrimental. Infrequent conflict may reflect suppression of

disagreements, either from the domination of one group member over the others or from social pressures not to challenge others. Too much conflict may prevent group members from moving forward, especially if group members engage in an adversarial or conflictual style of argumentation instead of a co-constructive style in which group members work together to critique suggestions and create new solutions.

Lack of Coordination

Group functioning may also suffer from uncoordinated communication (Barron, 2000), marked by low levels of attention to, and uptake of, members' suggestions (even correct ones), and by students advocating and repeating their own positions and ideas, ignoring others' suggestions, rejecting others' proposals without elaboration or justification, interrupting others, or talking over them simultaneously. Lack of coordination and joint attention may undermine many of the processes by which individuals can gain by collaborating with others, such as resolving conflicts and co-constructing knowledge, as well as reduce group cohesion and students' motivation to work together.

Other Negative Socioemotional Processes

Other negative socioemotional processes, such as rudeness, hostility, and unresponsiveness, may also impede the participation and learning of group members. Rudely disagreeing with others and ignoring their suggestions may prevent groups from solving problems correctly. Aggressiveness, hostility, and insulting behavior may lead to unconstructive and bitter arguments and may cause students to withhold knowledge and ideas from the group or decide not to seek help.

Approaches to Promoting Beneficial Peer Interaction

Researchers have designed a variety of collaborative approaches to promote beneficial peer interaction and inhibit detrimental group dynamics. Many, if not most, peer-based methods incorporate one or more of the strategies described here.

Preparing Students to Work Collaboratively

Altering expectations and status relationships

To promote equal participation among students in heterogeneous (especially multiracial) groups, Cohen and Lotan (1995) developed methods of minimizing status effects by altering high-status students' expectations about low-status students' competence. By training low-status students on academic and nonacademic tasks which they then teach to

high-status students, high-status students change their perceptions about low-status students' competence. A related approach is the multiability intervention, which raises students' awareness of the multiple skills necessary to perform the task. The teacher discusses with students the multiple abilities needed to solve complex problems (e.g., visual thinking, intuitive thinking, and reasoning) and, when groups work on these tasks, points out the particular contributions of specific students (particularly of low status) and how these are important and valuable.

These approaches have shown success in reducing the relationship between status (based on language background, race, socioeconomic status, and academic ability) and behavior in small groups. For example, the more frequently teachers talk about the multiple abilities needed for a task (and the fact that no one has all of the abilities) and assign competence to low-status students (e.g., observing and commenting on a non-English speaker's ability to build structures based on drawn diagrams), the greater is the participation rate of low-status students, and the smaller is the gap between the participation rates of high-status and low-status students.

Instruction in explaining and group reasoning skills

As an adjunct to providing social skills training designed to improve communication in groups, a number of studies have incorporated instruction in academic helping, explaining, and help-seeking behaviors, such as asking clear and precise questions, giving explanations instead of answers, monitoring understanding of teammates, checking others' answers, and giving specific feedback on the problem-solving strategies of their teammates. Some training approaches focus on helping students make their reasoning explicit and engage constructively with others' ideas (e.g., sharing relevant information, reaching agreement, taking responsibility for decisions, providing reasons, challenging others, and discussing alternatives before making decisions). Compared to untrained groups, this preparation for working in groups has been shown to produce more explaining and often higher achievement (Gillies and Ashman, 1996).

Structuring Peer Interaction

To supplement training in communication and explaining skills, some peer-based methods structure group interaction in specific ways or implement activities to guide groups' collaboration. These methods require groups to carry out certain strategies or activities, or assign students certain roles to play, or both.

Reciprocal teaching

Palincsar and Brown (1984) developed teacher scaffolded instruction, referred to as reciprocal teaching, to help students carry out certain strategies designed to improve comprehension of text: generating questions about the

text they have read, clarifying what they do not understand, summarizing the text, and generating predictions. Teachers initially take the leadership in explaining the strategies and modeling their use, and gradually help students become proficient (by asking students to demonstrate the strategies and giving them feedback) so that they can carry out the strategies in their groups. Students using reciprocal teaching methods have shown improvement in reading comprehension and better performance than students receiving other kinds of instruction with and without peer interaction.

Explanation prompts

Some peer-learning approaches give students specific prompts to encourage them to exchange elaborated explanations. Students may be prompted to describe what happened in their experiments, find patterns in their results, and explain why their results occurred. Alternatively, they may be prompted to construct explanations, justify answers and beliefs, relate what they learned in class to the task at hand, use distinguish between scientific and everyday definitions and explanations, and to compare real-world experiences to class learning. The use of these explanation prompts produces conceptually advanced explaining and more accurate and complete understanding of the material.

Guided reciprocal questioning

In guided reciprocal questioning, students ask each other high-level questions about the material to help them monitor their own and each others' comprehension and encourage students to describe and elaborate their thinking. King (1992), for example, gave students how and why question stems to guide their discussions of text (e.g., "Why is ... important? How are ... and ... similar?"; p. 113). In problem-solving contexts, students may ask each other questions to help them reflect on problems before solving them (e.g., identifying known and unknown information), make connections between current problems and previous ones, and generate and defend their choice of problem-solving strategies. The use of high-level questions by the groups increases the frequency of elaborated explaining and student achievement.

Structured controversy

To promote the benefits that arise from resolving conflicts, Johnson and Johnson's (1995) structured controversy approach subdivides groups into teams, requires them to master material on different sides of an issue and debate the issue with the other team, and then to work as a group to synthesize the two positions. Groups required to debate the issues often carry out more high-level discussion of material and show higher achievement than groups required to seek concurrence by working cooperatively and compromising.

Cognitive role specialization

Some approaches assign students roles to play (usually alternated or rotated) based on specific cognitive activities. Students may play the role of recaller (also referred to as learning leader or summarizer) or listener (also referred to as active listener, learning listener, or listener/facilitator), which are sometimes incorporated into scripts for groups to follow (O'Donnell, 1999). The recaller summarizes the material and the listener is responsible for detecting errors, identifying omissions, and seeking clarification. Students work together to elaborate on the material, and then change roles for the next part of the task. A large body of research shows that such scripted cooperation usually produces greater elaboration of ideas and higher student achievement than does unstructured cooperation.

Tutor and tutee roles are widely used. In reciprocal peer tutoring, students receive training in how to model strategies such as summarizing text, and how to give explanations, corrections, and feedback about other students' work, and then alternate tutor and tutee roles during pair work. Some approaches pair more-skilled and less-skilled learners, whereas others pair students randomly or with similar proficiency. Some approaches specifically focus on promoting a high-level of discourse during paired discussions, such as training tutors to give highly elaborated conceptual rather than algorithmic explanations to their partners, or training tutors to push tutees to give high-level explanations that make connections among ideas.

Manipulating the group-work task

Equal student participation can also be encouraged through the use of complex tasks or open-ended problems without clear-cut answers or procedures that require the combined expertise of everyone in the group. Such tasks encourage groups to and value the different contributions that students can make, whereas narrowly defined tasks or problems, especially those that can be completed by one student with the requisite skills, may limit the participation of some students.

The Teacher's Role

Developing Classroom Goal Structures and Norms

The teacher can influence peer interaction by working with students to mutually construct norms for student engagement. He/she can raise the level of discussion by monitoring and intervening in small-group dialogs to remind students about their obligations (e.g., to share their thinking and solution methods with others and to challenge each other's solutions) and make specific suggestions for (e.g., stop another student and ask for

help), and by using actual and hypothetical situations to initiate discussions with the class about students' responsibilities in collaborative work, and to show examples of genuine dialog between students (Yackel *et al.*, 1991).

Modeling Desired Discourse

Teachers also communicate their expectations for students' behavior through their own discourse. When teachers use a recitation approach in which they assume primary responsibility for solving the problem, ask students to provide only answers to discrete steps, and rarely encourage students to verbalize their thinking, groups may adopt an interactional style in which help-givers do most of the work and infrequently monitor other students' level of understanding. In contrast, training teachers to use specific skills to challenge students' thinking encourages students to probe each other's opinions, acknowledge each other's ideas, and attempt to relate new information to ideas previously discussed.

Further Research

While much is known about how and when students learn from their peers, as well as how small-group work might be orchestrated to produce desired learning outcomes, a number of issues have received less attention or are only beginning to be studied systematically. Some of these topics include how to use student characteristics (e.g., ability, gender, cultural or racial background, and personality) when creating group assignments to optimize group functioning for all students; the correspondence between mechanisms that promote academic and nonacademic outcomes (e.g., interpersonal attitudes, liking of the task, and values); the impact of different task structures (e.g., division of labor) on learning outcomes; peer interaction and learning in computer-mediated environments; and how to help teachers modify their teaching practices and classroom environments to facilitate peer learning.

See also: Social Aspects of Collaborative Learning; Social Interaction and Learning.

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Peer and Self-Assessment

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Introduction

This type of assessment involves students in the assessment process where they can learn to make judgments concerning their own work (self-assessment) and that of their fellow students (peer-assessment). Through self- and peer-assessment, students can become involved in an analysis and constructive criticism of their work. Taking part in peer- and self-assessment practices may also form a learning opportunity for students. This helps students develop a sense of what standards of work is expected of them by their teachers and can begin to acculturate them in the assessment process.

Classroom assessment plays a major role in how students learn and the way teachers teach. Peer- and self-assessment is not evident in all classrooms and, where it does occur, teachers have generally made pedagogic decisions with regard to its importance in learning because it requires time, preparation, and skill to implement successfully. This article attempts to pull together the research on peer- and self-assessment and is organized into three sections titled 'Peer and self-assessment in practice', 'Self-assessment is intrinsic to learning', and 'Self-assessment is part of lifelong learning'.

Peer and Self-Assessment in Practice

Moving to peer- or self-assessment is not a simple process as it requires training and experience before it can be successfully employed. A peer-evaluation experiment in a United Kingdom (UK) higher education institute found peer grading correlated positively with teacher grading. A survey of participants ($n = 70$) found that students believed their work had been marked fairly and the marks should count toward final grades (Conway *et al.*, 1993). The majority of studies compares the reliability of peer and teacher rating and indicates that peer-assessment is generally a useful, valid, and reliable method of assessment. An experiment in self-assessed learning – in which college students set their own goals weekly and prepare a self-assessment open to discussion by peers – encountered some problems in the implementation phase but was found to be the only method of achieving deep, as contrasted with surface, learning (Boyd and Cowan, 1985). This suggests that peer- and self-assessment are not simply replacements for teacher assessment but have merit in themselves.

Peer- and self-assessment can take many forms. There is a substantial amount of literature referring to peer-assessment of performance both in work settings such as hospitals and in theatrical and dance productions. Peer- and self-assessment may or may not involve discussions of quality before an assessment is undertaken. It may simply involve the use of rating instruments or checklists or mark schemes, which may have been designed – by others – before the peer-assessment exercise, and which peers simply apply to the work of their fellow students. Sometimes, self- and peer-assessments in classrooms are carried out on products or completed pieces of work, and here the purpose of making the assessment may be summative or formative, or applied during the process of learning when the main function is to utilize its formative function.

Peer-assessment is an organized event where learners of similar status consider and come to recognize the quality of work of one or more fellow peers. Sometimes, peers are asked to allocate marks or grades to a peer's work and, possibly, to provide some feedback on the judgment that they have reached. Peer-assessment can be formative or summative. Such feedback can be corrective, suggestive of alternatives, or simply confirmative. Peer-assessment is available in high volume, as there are generally more students than teachers in any class, and is generally more immediate than teacher-assessment (Topping, 2009). Peer-assessment is also perceived differently, by the learner, to feedback from their teacher. It is less authoritative and, thus, the student receiving feedback is less likely to simply accept the judgment – preferring to weigh up the options suggested by their peer and make decisions about improvements suggested. In this way, it can be an effective feedback mechanism for students as it can provide scaffolding for improvement by allowing the learner to review and renegotiate the quality of their work.

In many educational institutions, peer-assessment is introduced alongside, or as a precursor to, self-assessment. This is because teachers find it easier to model self-assessment practices through the vehicle of peer-assessment. Often, teachers begin training students in assessment by helping them peer-assess anonymous work so that they start to develop the ways and means of making judgments and of expressing these in an appropriate manner. Developing sufficient assessment-skill and literacy, to convey to others what our judgments are, takes time and experience to develop. By evolving these practices on anonymous work, supported by peers, students' self-esteem and motivation

is not affected. It is also easier for students to peer-assess rather than self-assess as they find it easier to stand back from the work and judge it for its strengths and weaknesses, rather than confounding such judgments with concern about the efforts they have put into the work or how they appear compared to their peers.

Most of the research studies that have focused on reliability of peer-assessment are set in higher education settings, with over 70% evaluated as adequate in assessment quality. Social processes that are indicative of any group of learners can mitigate against the reliability of peer-assessment, with friendship bonds, anxiety about sharing work with fellow students, or commenting on the work of others being likely inhibitors to full engagement with the process. Indeed, some studies noted a tendency for peer marks to bunch around the median. These studies also indicated that reliability was increased when supported by training and accompanied by checklists or exemplified and involved teachers in assisting or monitoring the process (Topping, 2009). While on the one hand, peer-assessment might save the teacher time in that she is not required to mark as much work, time and effort, on the other hand, are required to coach the students in peer-assessment practices.

Over the last decade, there has been a growing and sustained interest in formative assessment following the publication *Inside the Black Box*, by Black and Wiliam (1998b). Self-assessment has a key role to play in formative assessment. Black and Wiliam's (1998a) review of research on assessment and classroom learning showed a strong body of evidence that formative assessment practices raise standards in student learning. The review also indicated that such practices were only weakly developed in most classrooms. Since then, attempts to strengthen and develop formative assessment in classrooms in several countries have been underway.

The term assessment for learning was suggested by the Assessment Reform Group (1999) to try to help teachers differentiate the formative practices in classrooms from the summative ones, which tend to dominate in many classrooms. The Group stated that the research indicates that improving learning through assessment depends on five, deceptively simple, key factors:

- the provision of effective feedback to students;
- the active involvement of students in their own learning;
- adjusting teaching to take account of the results of assessment;
- a recognition of the profound influence assessment has on the motivation and self-esteem of students – both of which are crucial influences on learning; and
- the need for students to be able to assess themselves and understand how to improve.

Self-Assessment Is Intrinsic to Learning

Self-assessment is an essential component in the learning process because it helps students gauge suitable targets for their learning. This is because learning has to be done by learners, it cannot be done for them (Black *et al.*, 2003) and so helping them evolve a means of setting self-targets that fosters this process is useful. The assessment activity could be a test but, more often, it takes the form of a searching question or challenging activity, which encourages the learner to show what they know, what they partly know, and what they do not know (Black and Harrison, 2004). The assessment activity will, therefore, take place alongside or as part of the learning and is used as a tool to diagnose current understanding. Using self-assessment information requires control over one's cognitive activities or metacognition: understanding what strategies and skills are needed for a task and knowing how and when to use them (Brookhart, 2004).

This process helps them form frameworks for assessing their own work and also when applying assessment criteria to new pieces of work. When they can do this, learners are able to steer their own learning toward the learning goal because they have developed self-assessment techniques that help them in learning the ideas and developing the skills for that piece of work at the same time. By doing this, it can help students regulate their future learning and to keep on track and ensure that they are progressing. Through this ipsative process, learners realize what they have learnt and become more aware of what they need to do to improve, and – as a consequence – are often more motivated to learn. However, many studies of self-assessment do not involve students in the selection of criteria and simply ask them to rate themselves according to some preestablished scale. This inhibits students in acquiring a sense of quality that they can use to look at their own work – and that of others – in a variety of contexts. In other words, it prevents students developing self-regulatory skills.

For self-assessment to work, learners need to be able to gauge how much their current ways of working fit with expected practice. Teachers often model their expectations of students by referring to the work of previous students or by producing work themselves that would be typical of student work. This degree of anonymity allows students to engage with the work without conflicting concerns for their own or fellow students' self-esteem and, thus, discussions about work quality are entered into freely. In the UK, this approach has been popular over recent years and has been encouraged through professional development for teachers on strengthening questioning skills and collaborative group-work so that the teachers have the skills to support their students in these discussions (Black *et al.*, 2003).

When students are faced with new experiences, they need to make sense of them, and they do this by linking new ideas with old ones and then self-monitoring and generating new ways of thinking. Language is at the heart of this process. The learner uses talk to engage with the new knowledge and to try to understand it within their own personal frameworks through interactions with other learners and their teacher. They achieve a part of this through comparison with their previous thinking in that area, but the major part of this learning is in negotiating common meaning with others who are also engaged in the learning experience. Learners know when they do not understand the ideas arising within a learning situation. It is only through entering the dialog about shared ideas that the learner can begin to see other aspects of the ideas and so make judgments about where they are in their own sense-making. Nonengagement not only deprives the group of the learner's position but also prevents the learner from revealing their own sense-making to themselves. When the learner offers their emergent understanding, then they can both assess and modify their learning since movement forward – in terms of improvement or progress – rests on the reaction from others in the group. In this way, new knowledge is socially constructed (Vygotsky, 1978) and the immediacy of communication through dialog is essential in achieving this.

It is not simply that the learner hears several voices through dialog but that the ideas from individuals get challenged, molded, and reexamined through the collective voice of the group. Each individual student is able to check their own understanding against that emerging from the group dialog and, thus, self-assessment is at the centre of this process. Isaacs (1999) argues that this is not simply shared knowledge that arises from dialog but a sense of meaning that he terms "collective sensibility" that has evolved from the interactions and from which learners can capture their own sense of understanding. Because each learner brings their own knowledge, aspirations, and limitations to the interactive process, they will have a particular lens on the shared knowledge that arises through the dialog. Therefore, what they focus on, capture, and retrieve from the shared knowledge will depend on the lens they select as well as their capacity to engage with the shared knowledge as it arises. This process helps students regulate their learning. They can consider what they understand and misunderstand against the backdrop of what the group understands. This helps them locate where they are in their learning and where they need to focus to improve. So, for assessment for learning, classroom talk is an exploratory process that enables learners to match their current understanding against that of the groups and through which they might gain better understanding, since the cumulative knowledge of the group is likely to be more than that of any one individual within

the group. In engaging in the classroom talk, the learner is not only revealing to themselves their current understanding but is also providing their teacher with the evidence with regard to this and thus is also setting into action teacher planning for the next steps.

Deakin-Crick *et al.* (2007) review of the impact on students of self- and peer-assessment highlighted the need to include learners in decisions concerning how and what is being studied and insights into how the work is being assessed. In this way, learners become more informed regarding the learning process and play a more equal role with the teacher in making learning decisions. This has important messages for pedagogy since it is the ecology of learning that is called into question here and many teachers will need to change their classroom environments significantly to treat learners as co-constructors of the learning process.

A further factor to consider is self-efficacy, which involves the learner's estimate of their capabilities and their likely success in a particular task. Students with high expectations of their capability will tend to persist with tasks and put in greater effort than those with low self-perceptions. The former are, therefore, likely to be more successful and this feeds into a cycle of success for these learners (Schunk, 1995). The concern is that students with low self-efficacy believe that they cannot achieve and avoid tasks where they cannot quickly gain success, and so their self-assessment skills do not get a chance to develop very much.

Self-Assessment Is Part of Lifelong Learning

The fundamental role of school is to foster lifelong learning and to support children in learning how to learn. The dilemma for teachers is how to provide learning experiences that help children develop the skills they will need in their adulthood for a world that is in the future. Most university prospectuses, at present, include some statements relating to lifelong learning. In general, these focus on two aspects – active learning approaches and reflection. Universities increasingly expect their students to utilize active learning approaches where the student is encouraged to engage, research, and analyze ideas and to develop these collaboratively with others. Second, many courses encourage students to be more reflective by revisiting learning experiences, by making explicit how they approached the learning, and evaluating what they learnt about the task itself and their response to the task. In most institutions, this approach tends to emphasize:

- Learning-how-to-learn skills
- Disposition to learn and take learning opportunities
- Problem-formulation and problem-solving

- Ability to learn with and from others, teamwork
- Ability to identify and access appropriate resources for learning and assessment. (Boud and Falchikov, 2004)

Carr and Claxton (2002) suggest the way forward is to focus on developing learning power, which – they argue – consists of two related facets: skills for learning – which they call capabilities – and willingness and readiness to learn – which they term dispositions. The researchers believe that disposition requires high degrees of resourcefulness and reflectiveness and that these dispositions are inherent and evolvable in all children. Their approach to lifelong learning suggests that these dispositions can be trained and nurtured.

Developing these skills of self-regulation is not simple. Boud and Falchikov (2004) highlights that it is not simply a matter of adding self-assessment to the learning and assessment experiences, but of rethinking learning and assessment from a new point of view and examining the consequences for practice. The problem that arises is that, in learning-how-to-learn and becoming a lifelong learner, the capacity to become an assessor of learning is sometimes omitted, retained by the teacher, or not given sufficient focus. While self-assessment is implicit in learning how to learn, many approaches to develop lifelong learning skills fail to recognize and develop this aspect sufficiently to allow the learner to develop these skills and become more independent in their learning.

Sadler (1989) in his seminal paper on formative assessment highlights the importance of developing assessment skills in learners:

... providing guided but direct and authentic evaluative experience for students enables them to develop their evaluative knowledge, thereby bringing them within the guild of people who are able to determine quality using multiple criteria. It also enables transfer of some of the responsibility for making evaluative decisions from teacher to learner. (p. 119)

To implement this in the classroom, requires skill and time. Rolheiser (1996) suggests a four-stage plan for introducing self-assessment into the classroom that gradually skills the students in assessment practices, while gradually increasing their involvement in the assessment process.

- Stage 1 – involve students in defining the criteria.
- Stage 2 – explore with students how to apply the criteria to their own work.
- Stage 3 – give students feedback on their self-evaluations.
- Stage 4 – assist students in developing productive goals and action plans.

Rolheiser found that such approaches helped both teachers and students engage with self-assessment in the classroom and that these processes had a marked effect on intrinsic motivation.

Assessment practices can undermine students' capacity to judge their own work and this can work to constrain the lifelong learning agenda. It encourages students to look to their teachers to make judgments and inhibits them from developing their ability to assess their own learning outcomes. In other words, if students are always passing the responsibility for assessment to others, they may not acquire self-assessment skills.

... if students are to be encouraged to be lifelong learners, they must be weaned away from any tendency towards over-reliance on the opinions of others. Ultimately, in real world contexts, they must be able to judge or evaluate the adequacy, completeness or appropriateness of their own learning, so whatever assessment practices are used must be comprehensible to the learners so that they can be internalised as criteria for critical self-evaluation. (Candy *et al.*, 1994: 150)

Marshall and Wiliam (2006) introduce the notion of apprenticing pupils into the guild knowledge as the chief lever of progression and formative practice. Before learning can even commence, there is a need for learners to identify for themselves what they need to learn – taking into account a range of contextual factors – and to judge for themselves what counts as good work. The work by Orsmond and colleagues suggests that teachers need to carefully scaffold developing assessment ideas to enable students to begin to understand and utilize the criteria for quality (Orsmond *et al.*, 2002). Nevertheless, the goal must always be that students themselves can learn to judge for themselves what constitutes quality work. Students will not develop this if they do not have practice in determining appropriate standards for themselves.

There are substantial barriers to having students accept assessment as a key element of their continuing learning. The greatest of these are their prior experiences of being assessed and the ways in which these experiences influence their expectations and behavior in the present. While this has been little discussed in the literature, it appears to us to be an issue of such importance that it must be considered high on the agenda. Indeed, James (2000) suggests that grades and inadequate feedback to students on specific work can negatively impact on students' overall self-perception and confidence. If peer- and self-assessment is handled in such a way that it negatively affects student self-esteem, then this can demotivate learners and may lead to situations where students refuse to take part in future learning.

Summary

Peer- and self-assessment involve learners in the assessment process and this provides these individuals with an insight into how successful they have been in their performance

or with their product. This way of working can also have a formative function in that it can be utilized by the student formatively so that they become aware of their next steps for improvement. Teachers need to be aware that students require support and training if they are to acquire the necessary skills to assess themselves and others effectively. Involving students in peer- and self-assessment can lead to an understanding of the quality that teachers expect in pieces of work and this can lead to self-regulation of learning, which is the ultimate goal of lifelong learning.

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Peer Relations and Socialization of Children and Adolescents with Special Needs and Adolescents with Disabilities

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According to the literature, children who are socially competent, experience positive social interpersonal relationships, peer acceptance, satisfactory school adjustment, and cope with and adapt to the demands of various social settings (Gresham *et al.*, 2003). In the absence of these prosocial skills, students suffer – both socially and academically (Bullock and Gable, 2001; Kerr and Nelson, 2006; Schoenfeld *et al.*, in press). Indeed, a defining characteristic of children with emotional/behavioral disorders is the inability to build or maintain satisfactory interpersonal relationships (Kauffman, 2003; Kerr and Nelson, 2006). Between 35% and 75% of children with learning disabilities exhibit problems establishing and maintaining friendships (Kavale and Forness, 1996). In addition, a significant number of individuals with cognitive impairments show social skill deficits (Strain and Kerr, 1981). With the disillusionment of a two-box system of public education – one box for general education and the other for special education students, there has been mounting attention given to peer relations and social development of students with special needs.

We have long recognized the critical role that peer relationships play in children's overall socialization. To better understand that developmental process and how that knowledge can improve prevention/intervention efforts, researchers have examined the role peer relationships play in the development of both adaptive and maladaptive patterns of behavior (e.g., Deater-Decker, 2001; Santos and Winegar, 1999). This growing body of research has increased substantially our understanding of the complex nature of social interpersonal relationships among children and adolescents – with and without special needs. Notwithstanding the contributions of these investigations, a myriad of questions remain regarding the nuances of children's interpersonal relationships (Ellis and Zarbatany, 2007) and the socialization process as it relates to individuals with special needs (Larrivee and Horne, 1991).

In this article, we examine peer relations and socialization of children/adolescents with special needs. To accomplish our goal, we conducted a review of the accumulated literature by means of the search engine ERIC and Academic Search Premier using the keywords: peer relations, socialization, and special education. Furthermore, we used the Internet search engine Google and the same keywords to obtain additional information.

In addition, we conducted a manual search of textbooks and professional journals. Finally, we made use of various reference lists to complete our literature review on peer relations and socialization of students with disabilities.

Past-to-Present Perspectives on Peer Socialization

Beginning in the 1920s, child development specialists were among the first to focus attention on social development and the role of peers in the socialization process (Haynie and Osgood, 2005). For example, Piaget (1932) posed that peer experiences contribute uniquely to children's social development and what they might reasonably expect from peer relationships. Hartup (1977, 1979) asserted that children who did not experience positive encounters with peers are developmentally at risk. Similarly, Piaget (1978) maintained that children who fail to learn from early social interactions must either learn to alter their behavior or risk peer rejection. Subsequently, a series of longitudinal studies confirmed these assumptions and documented the fact that social interpersonal problems from childhood to late adolescence are inextricably linked to early manifestations of peer-group problems and to later social maladjustment (McCord *et al.*, 1963; Roff *et al.*, 1972). In one such study, Roff *et al.* found that poor relations in the primary grades were highly predictive of adolescent delinquency and mental health problems in adulthood. Others also have documented the long-term deleterious effects of isolation and social withdrawal during childhood (e.g., Kauffman 2003; Kerr and Nelson, 2006; Strain and Kerr, 1981).

Although the underpinning for peer relationships starts with parents and other caregivers, the task of adjusting to the peer group begins in preschool (Read, 1960; Ross *et al.*, 1990). Not surprisingly, early-childhood educators attach major significance to social development and the socialization experiences that occur in these early peer-group interactions (Forness *et al.*, 1981). For instance, Read looked closely at nursery school education and its contributions to understanding the basics of human behavior and the socialization process. Read noted that early-childhood education is a place where adults learn much from their observations of children, as they interact with them and, most importantly, provide them with a setting that nurtures

interpersonal relationships. Fortunately, the majority of preschoolers thrive in such an environment and make gains in such disparate areas as critical thinking, expressive and receptive language, problem solving, and prosocialization. However, from the beginning, some children struggle in one or more of these areas, to the degree that they stand apart from their normally developing classmates.

Cook and Wollersheim (1976) explored individual differences among children to the degree to which some are labeled as disabled. They highlighted the potential negative consequences of labeling students, but noted the fact that positive social contacts can engender more positive attitudes and increase the level of peer acceptance. Earlier in their seminal work, Hartup *et al.* (1967) demonstrated that positive social interactions could ameliorate many emergent social interpersonal problems. In the same dimension, Morrison and Borthwick (1983) investigated the relationship between patterns of classroom behavior and the relative social status of children with special needs. They found that classmate's perspectives on cognitive and behavioral performance contribute differentially to social acceptance versus peer rejection. Across time, researchers have examined numerous factors that relate to the overall social adjustment of children and adolescents. Among the more significant findings is the fact that the development of peer relationships and academic achievement are interrelated and of equal importance to peer acceptance (Quicke, 1986). In addition, Quicke asserted that peer interactions were a critical part of the learning process for all students – with or without disabilities. Adults influence not only academics, but also socialization. Studies on the relationship between teachers' perception and socially appropriate behavior indicate that students who fail to meet teacher expectations are at increased risk for poor social interactions with teachers and peers, diminished academic performance, and a disproportionately higher number of disciplinary problems (Bereiter and Engelmann, 1967; Driscoll and Carter, 2004; Stainback and Stainback, 1992). The net result is that students who do not perform well academically risk disapproval of both classmates and adults and, if those problems go untreated, they increase the prospect of future school-related problems.

Chronological Age and the Socialization Process

There is ample evidence that peer interactions represent an important context within which children reach various social–interpersonal milestones (Hartup, 1979; Hartup and Stevens, 1997; Hodges *et al.*, 1999; Kao, 2000; Parker and Asher, 1987). From the beginning, peer attitudes play a pivotal role in the overall socialization of children and youth with and without special needs (McDougall

et al., 2004). At the elementary-school level, children engage in a wide range of social exchanges in various settings, such as the classroom, cafeteria, and the playground. Research suggests that children's peer interactions occur on several different levels: (1) general interactions, (2) interpersonal relationships, and (3) peer groups (Rubin *et al.*, 1998). Research on children's general interactions and relationships with peers suggest that children place a great deal of emphasis on social competence (Diamond and Carpenter, 2000; Ellis and Zarbatany, 2007; Hodges *et al.*, 1999) and popularity (Parker and Asher, 1987; Rubin *et al.*, 1998). In both respects, children at risk or with disabilities are more likely to be marginalized than their classmates.

By early adolescence, the majority of social interactions occur within a group context (Crockett *et al.*, 1984). In a study of 1872, high schoolers, McDougall *et al.* (2004) found that 61% of the participants held attitudes toward peers with special needs that ranged from slightly above neutral to very positive. However, 21% of the students held slightly below neutral to very negative attitudes toward peers with special needs. The researchers also found that when school personnel put emphasis on understanding and acceptance of students with individual differences, students had a more positive attitude toward classmates with special needs (McDougall *et al.*, 2004). In a related investigation, Hartup and Stevens (1997) looked at the influence of children's dyadic friendships on friends' behavior and found that attitudes generally become more alike over time. One conclusion is that, although adults have a powerful influence on children, routine exchanges with other children appear to play a critical role in overall social development (Musser and Graziano, 1991). Peer-peer interactions afford children experiences that are not endemic to child–adult interactions and have a profound impact on the social development of students with and without special needs (Hartup, 1983; Parker and Asher, 1987). At the same time, research on adolescent peer relationships indicates that popularity in this age group represents a defining characteristic of adaptive social development (e.g., Musser and Graziano, 1991). Interestingly, adolescence popularity within their peer group does not immunize them from succumbing to anti-social, delinquent behavior, and substance abuse (Allen *et al.*, 2005). Furthermore, Allen and his colleagues found that, in early adolescence, peer popularity plays a dual role. That is, adolescents who are popular within their wider peer group also are likely to be viewed as being more competent within their closest friendships.

Gender-Related Differences and Socialization

Our review revealed substantial gender-related differences, peer relationships, and the socialization process

(Rose and Rudolph, 2006). Studies on the frequency of group interactions among young children have resulted in conflicting outcomes (e.g., Benenson, 1993; Fabes *et al.*, 2003; Martin and Fabes, 2001). Studies conducted on playgroups revealed larger playgroup sizes for boys than girls, and that there were gender-related differences in the organization of children's playtime activities (Lever, 1976; 1978). Specifically, Lever (1976) found six differences of peer socialization between boys and girls including the fact that boys play outdoors far more than girls. Rather than participate in outdoor activities, girls preferred to play board games or with dolls. Even though boys and girls spent essentially the same amount of time playing alone, boys more often played in larger and more age-heterogeneous groups. Boys engaged in more competitive games than girls, with boys' games lasting longer than girls' games. In addition, researchers who assessed the frequency of dyadic interaction among young children found that boys interact in dyads as frequently, or more frequently, than do girls (Benenson, 1993; Benenson *et al.*, 1997; Martin and Fabes, 2001). Although it is difficult to draw any definitive conclusions, it is reasonable to conclude that the disparate nature of female/male play behavior results in different cognitive, emotional, and behavioral lessons learned.

Rose and Rudolph (2006) argued that girls have a greater tendency than boys to experience stress within the context of a dyadic friendship and to experience vicariously the emotional stress experienced by friends who are part of their social network. Purportedly, girls experience higher levels of stress than boys, particularly during adolescence. The only kind of peer stress that boys experience more than girls was physical and direct verbal victimization. One possible conclusion is that these gender-related differences may make girls more vulnerable to problems of emotional adjustment (Rose and Rudolph, 2006). Repeated exposure to peer stress may lead to diminished perceptions of social competence, concern about friends' welfare, and a sense of hopelessness, all of which can put youth at risk for emotional difficulties such as anxiety and depression (Rudolph, 2002). Further, girls tend to be exposed more to peer stress than boys – especially during adolescence (Rudolph and Hammen, 1999) which may explain the differences in age of onset and intensification of internalizing versus externalizing problems of adolescence (Rose and Rudolph, 2006). Males are diagnosed earlier and manifest more externalizing problems, such as verbal and physical aggression and antisocial acts; whereas, females are guilty of engaging in the so-called status offenses – behavior that is chronically unacceptable, such as running away and sexual activity. In sum, the differing social and emotional nature of male-versus female-dominated peer groups underscore the significance of individual cognitive, emotional, and behavioral coping skills and the influence

peers exert over one another's behavior. Finally, it seems logical to consider age- and gender-related differences in the socialization process, for both students with and without special needs.

Research on behavioral adjustment between boys and girls suggests that boys are more often exposed to overt or physical victimization and that exposure may contribute to their propensity for developing more externalizing behavioral problems such as aggression and antisocial behavior (Rose and Rudolph, 2006). In addition, boys are more likely to be targets of overt victimization which is highly predictive of an increase in externalizing problems over time (Hodges *et al.*, 1999; Hodges and Perry, 1999). There have been relatively few studies on peer stressors; those that have been conducted have produced inconsistent outcomes. Some indicate that the effects of peer stressors on adjustment are similar for boys and girls; while, others suggest that the effects may vary by sex (Rose and Rudolph, 2006). Peer-related stress among girls can pose a serious threat to their emotional well-being (Rose and Rudolph, 2006). Specifically, girls find that interpersonal stress (Rudolph, 2002) and relational or social victimization more emotionally challenging than their male counterparts (Crick *et al.*, 1996). Girls also report experiencing more negative emotions within the context of peer-peer interactions (Larson and Asmussen, 1991). The significance of these investigations is that interpersonal and peer stress are highly correlated with emotional difficulties for both female and male students, but the impact of that stress may manifest itself in different gender-specific ways (Rudolph, 2002).

Rose and Rudolph (2006) maintained that in responding to behavioral problems, girls tend to be more active in seeking support, whereas, boys are less likely to seek outside support and instead try to internalize negative feelings. Unresolved interpersonal conflict among peers may lead to future misunderstandings and hard feelings which, in turn, may precipitate bouts of physical aggression calculated to satisfy a desire for revenge (Rose and Rudolph, 2006). Additionally, Pollack (1998) suggested that because boys have fewer outlets for expressing emotions, such as disappointment or hurt feelings, it is more likely that they will express their emotions through anger and/or overt aggression.

As Rose and Rudolph (2006) pointed out, the social exchanges that occur within a relationship among children/adolescents are inextricably linked to positive emotional adjustment. Oldenburg and Kerns (1997) found that the perception of friendship as validation of an individual's self-worth can translate into lower levels of depression. In addition, positive interpersonal peer relationships appear to decrease the risk of school-related behavior problems (see Rose and Rudolph). In contrast, a negative emotional adjustment can have broad implications with regard to an individual's assessment of self and feelings of

low self-worth, emotional depression, and/or physical anxiety. In sum, gender-related differences appear to account for at least some of variance in children's emotional and behavioral adjustment versus nonadjustment (see Rose and Rudolph).

Culture and Socialization

Some researchers believe that culturally related factors play a key role in how society responds to the behavior of males versus females (e.g., Cartledge and Loe, 2001). However, Hastings *et al.* (2007) noted that gender differences in prosocial behavior may be more attributable to perception than to reality. They believe adults may be more likely to notice and to remember the prosocial behavior of girls because they conform to a cultural stereotype of appropriate feminine behavior. However, Cartledge and Loe (2001) discussed ways in which culture plays a role in shaping the school environment and how it impacts differently among diverse ethnic groups. Cartledge and Loe further explained that collectivistic and individualist orientations were the major distinctions between the dominant group in this society and those of other culturally diverse groups. Earlier, Kao (2000) summarized the stigma attached to diverse groups where students' self-images are shaped on the basis of what defines success among ethnic youth; particularly, some students from culturally diverse backgrounds speak of academic goals in terms of avoiding failure while Asian students focus on keeping up with high expectations on their academic pursuits. Additionally, Kao explored the effects of group image in relation to racial and ethnic stereotypes and expectations and further found that (1) groups defined their goals primarily in terms of the stereotypical images attached to their ethnic group, (2) minority youth focused on avoiding failure defined by prevalent group stereotypes, and these images maintain racially and ethnically segregated extracurricular activities that reinforced segregated peer groups, and (3) socialization with same-race peers promotes comparable conceptions of success within racial groups.

Aside from cultural influences on peer relations, researchers have examined economics and its effect on the development of interpersonal relationships. For example, Garner *et al.* (1994) investigated social competence among low-income populations and its effect on emotional development and socialization. They found that there is a positive correlation between emotional socialization practices and emotional knowledge in the development of low-income children's interpersonal skills. Garner (1996) found that the affective or moral attributions of low-income school-age children were similar to those of middle-income children. Middle- and low-income children reported more empathy, altruism, and

more aggression than guilt or denial, in response to a hypothetical emotion-eliciting situation (see Garner, 1996). Garner *et al.* (1994) stressed that family socialization practices are linked to the social competence of the child, the child's social and cognitive knowledge, and that the child's social and cognitive knowledge contributed to the child's overall social competence. Notwithstanding the obvious influence of families, there is compelling evidence that situational or contextual factors influence the socialization among peers with or without special needs as well (Favazza and Odom, 1997; Hampson, 1984; Haynie and Osgood, 2005).

Program Integration and Social Development

The long-standing practice of serving young children with special needs in settings that include normally developing peers is predicated on moral, legal, and educational grounds (Bailey *et al.*, 1998; Strain and Kerr, 1981). Various authors have offered a moral rationale to support of inclusive practices, namely, that children with special needs have a right to a life that is as normal as possible (Stainback and Stainback, 1992). Some (e.g., Diamond and Carpenter, 2000) have interpreted this perspective to include participation in the same high-quality programs afforded to children without special needs, along with participation in class activities and in positive relationships with individual class members. An educational justification for inclusion typically has focused on the developmental benefits of inclusion for children with special needs, including providing a more challenging and socially responsive learning environment in which they have an opportunity to learn from more competent peers.

Recent federal legislation, specifically the Individual with Disabilities Education Improvement Act (IDEIA) (IDEIA, 2004) and the Americans with Disabilities Act (ADA) (1990), lend legislative and legal support for inclusion (US Department of Education, 2007). IDEIA requires that children with special needs receive education services in the least-restrictive environment and, to the maximum extent appropriate, are educated with children who are not disabled (Buysse and Bailey, 1993). Research on social influences that stem from the integration of children with and without special needs has focused on various approaches and has yielded support for a mix of program options (Buysse and Bailey). Advocates of early integration offer a three-fold argument: (1) children have not yet formed impressions or biases about groups of individuals; therefore, it is important to minimize the probability of overt teasing or rejection, (2) early interactions with persons who have special needs should increase the future probability of acceptance by normally developing peers, and (3) early placement of children in real-world settings creates an expectation on the part of professionals and

parents that integration is the norm that more adequately prepares children with special needs to succeed – academically and socially – in a mainstream environment. In a closely related study, Wentzel (1993) explored the relationship between academic outcomes, measured against grades and standardized achievement test scores and students' social and academic behavior. Teacher ratings of students' prosocial behavior were a significant predictor of standardized achievement test scores. Finally, prosocial, antisocial, and academic behavior was highly predictive of students' grade-point averages. As others before, Gresham *et al.* (2001) claimed that the ability to interact successfully with peers and significant adults is one of the most important aspects of students' development. Other researchers (e.g., Parker and Asher, 1987) have emphasized that maintaining social competence and social adjustments depends on the extent to which students are able to (1) establish and maintain satisfactory interpersonal relationships, (2) gain peer acceptance, (3) establish and maintain friendships, and (4) terminate negative or pernicious interpersonal relationships.

Promoting Peer Relations and Socialization through Programs and Interventions

There is significant overlap between specific programs and the actual interventions conducted within those environments designed to promote peer relations and socialization in schools for students with special needs (Brown *et al.*, 2001; King-Sears, 2001; Mathur and Rutherford, 1991). Although the original concept of head start stressed the social and emotional aspects of a child's development (Zigler and Trickett, 1978), more prominent early-childhood programs emphasized curricular activities that would facilitate cognitive and language developments (Gray *et al.*, 1966; Weikart *et al.*, 1971), as well as reading and math (Bereiter and Engelmann, 1967). Social development was addressed in global, unspecified terms that related to a child's self-concept and sense of personal achievement (Brown *et al.*, 2001).

Diamond (2001) postulated that if children's experiences in inclusive programs are positive, these experiences will support the development of positive attitudes toward people with special needs, both during the early and in later years. In contrast, negative experiences in inclusive programs may lead to the development of prejudices toward people with special needs (Stoneman, 1993). In addition, research with preschool children has shown that peer-mediated intervention can be successful in facilitating children's successful participation in preschool activities (e.g., Robertson *et al.*, 2003). Research conducted on mid-childhood and adolescents indicated enduring positive

outcomes of participation in programs with peers with special needs (Mervis, 1998; Ryan, 2000).

Other researchers (e.g., Moroz and Jones, 2002) have examined the effectiveness of positive peer reporting on children's social involvement. Positive peer reporting is a technique that consisted of rewarding peers for publicly praising the social behavior of their peers. Moroz and Jones' findings supported the use of peers as sources of positive reinforcement for the prosocial behavior of at-risk children. In addition, Ang and Hughes (2001) conducted a meta-analytic investigation that explored the potential benefits of skills training with antisocial youth based on group settings. They found that in 38 studies of social skills training interventions and treatment with anti-social youth, skills-training interventions delivered in the context of groups consisting of only anti-social peers produced smaller benefits than did skills-training interventions that avoided aggregating antisocial peers. In their follow-up, 18 studies reported that treatments provided in the context of either mixed or individual treatment produced larger effect sizes than did deviant-only group interventions. Further, their findings suggested an implication for the recruitment of prosocial peers for inclusion in skills training interventions for aggressive and antisocial youth.

Conclusion

Both researchers and practitioners have long shown interest in peer relations and the socialization process. Despite a growing body of research, gaps between research and practice have become increasingly problematic and pose a major obstacle to optimizing positive student outcomes (Cook *et al.*, 2003). In reflecting on the progress within special education, Kauffman (2003) offered the following observations: (1) the scientific basis for special education is not yet universally accepted; (2) too many in the field discount science as a way of finding things out and believe that special education is fundamentally flawed, second rate, and ineffective as it relates to prevention, (3) we have yet to attach enough importance to academic instruction, (4) we have done too little to address the needs families who suffer the vicissitudes of poverty or the needs of children who have a variety of undesirable life outcomes, and (5) we must strive to achieve the elusive goal of greater harmony, mutual understanding, and equality of opportunity regardless of ethnicity or gender. In the past several decades, we have made real progress in promoting the prosocialization and peer acceptance of students with special needs, but much is yet to be accomplished. Given the life-altering significance of that challenge, now is not the time for modest ambitions.

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Social Aspects of Collaborative Learning

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Glossary

Collaboration, Collaborative learning – In this article, mostly referred as construction of shared understanding, coordination, co-construction of knowledge.

Content and relational space of communication – Content space refers to cognitive aspect of collaborative communication, for example, how the subject in hand is reasoned, relational space refers to social aspect of collaborative communication, for example, how students orientate towards each others in interaction (collaborative, individualistic or competitive orientation).

Social aspects – Social dimension in collaborative interaction, social relationships (friendship, status).

Status – (1) Academic status: perceived academic ability or knowledge level; (2) Peer status: perceived attractiveness or popularity.

knowledge (e.g., Elbers and Streefland, 2000; Crook, 2002), exploratory talk (Mercer, 1996), or coordination (Barron, 2000). However, on closer inspection, the core of all these terms seems to refer to interaction of a similar type – one that calls for specific qualities from cognitive, social, and emotional perspectives.

According to Barron (2000), the extent to which a group works collaboratively depends on the degree of coordination among the group members. In her study comparing the interaction of successful and less-successful student triads, Barron (2000) found three forms of coordination – shared task alignment, mutuality, and jointly focused attention – by which the interaction of these groups differed. The group activity is coordinated in a situation where the students have shared task alignment. In such a situation, the students have collaborative orientation toward problem solving, and the activity is organized around joint problem-solving efforts. In the activities of groups, this is manifested in the co-construction of solutions and referring to and expanding each other's ideas as opposed to individual solution paths and reference to one's own ideas. The success presupposes that participants have achieved a common ground (Clark, 1996) or alignment in the sense that students work in phase at the same conceptual level (Baker, 2002). Barron (2000) adds that there may be some complementary role division in the activity as in a situation where one person is generating ideas while writing and the other is monitoring the documentation. Thus, there is some horizontal division of labor while the first person is acting at the task level and the other, at the meta-(communicative) level (Dillenbourg, 1999).

Mutuality, Barron's second form of coordination, refers to the extent to which there is reciprocity and balance in the interaction with potential of all members to meaningfully contribute and be heard. Mutuality is reflected in the nature of dialog; how the contributions of others are treated in the discussion and how the ideas offered are engaged by others. Barron refers to transactive dialogs, introduced by Berkowitz and Gibbs (1985), where one partner's reasoning operates on another partner's reasoning. In interaction, the content of the other person's turn of speech is taken into account and acknowledged, for example, by acceptance, clarification, or elaboration, instead of rejection without an explanation. Even the conflicts that arise in the situation are productive (Barron, 2000). It is also typical of mutuality that the turn-taking norms are respected. Barron's (2002) mutuality comes close to Baker's (2002) notion of symmetry. According to Baker (2002), interaction is symmetrical if the participants adopt certain roles equally throughout the

The ideas presented in this article are based on the recent research on collaborative learning. This research demonstrates the dual nature of collaboration, in which cognitive and social processes of learning interact with each other in a dynamic manner. The article first discusses the central concepts and research trends related to the social dimension of collaborative activity. Further, research results on social relationships in collaborative learning are summarized. Particular emphasis is laid on the friendship and status. Finally, the main findings on social aspects of collaborative learning are synthesized, and some critical challenges for this research field are raised.

Social Dimension in Collaborative Activity

The most widely used definition of collaboration describes it as a construction of shared understanding through interaction with others, where the participants are committed to or engaged in shared goals and problem solving (Dillenbourg, 1999; Littleton and Häkkinen, 1999; Roschelle and Teasley, 1995). In addition to the construction of shared understanding, collaboration is commonly referred to as the co-construction of knowledge (e.g., Rafal, 1996; Baker, 2002), building collaborative knowing (Stahl, 2004), co-argumentation (Baker, 2002), negotiating of shared meaning (Pea, 1993), construction of common

interaction, that is, participate equally in problem solving. Even though Baker (2002) does not refer to symmetry of knowledge, a certain degree of knowledge symmetry is essential to enable equal roles (Dillenbourg, 1999). If the knowledge level of the participants is very different, it easily triggers different (permanent) statuses and roles in the learning situation (Cohen, 1994). In addition, Van Boxtel (2000) observes that the essential prerequisite for co-construction is that all participants equally contribute to the elaboration and solution of the problem at hand. In her work, she describes co-construction as an elaborative episode in which both (all) participants make a verbal and propositional contribution to the elaboration.

The third dimension of coordination is the degree to which the attention is jointly focused during solution-critical moments. In the interaction, there is high sensitivity to one another's attentional states. According to Barron (2000), joint attention is closely related to the notion of mutuality. In addition, the notion of joint attention has similarities with Baker's (2002) term, alignment, in the sense that, in the occasions of joint attention, all the students are working in phase with respect to the activities, and there is not even a horizontal division of labor. As a whole, the three dimensions of coordination – shared task alignment, mutuality, and jointly focused attention – can be regarded as different intertwined aspects of collaborative interaction. For example, the co-construction of knowledge is not possible unless group members have joint focus or mutuality in the situation.

The descriptions presented above well illustrate the dual nature of collaborative interactions. According to Barron (2003), in collaborative activity, the participants have to develop and monitor both the content space and the relational space or, as Sfard and Kieran (2001) put it, the object and meta-level of communication. The content space refers to the cognitive aspect of collaboration: how the subject at hand is reasoned, how the ideas are developed in discussion, and how the shared understanding is constructed. Relational space refers more to the social aspect of collaboration and to the way in which participants in dialog (or monolog) orientate toward each other (and how willing they are to engage in interaction) (Barron, 2003). In the joint activity, the students may have collaborative orientation in their working, or the situation can be competitive, individualistic (Barron, 2003; Mercer, 1996; Sfard and Kieran, 2001), or asymmetrical (Baker, 2002). In a competitive situation, individual participants define themselves through their difference from the others, each having his or her own competing interests, which they try to drive through (Wegerif and Mercer, 1997). Thus, the participants easily end up with disputing rather than arguing for their case. In an individualistic orientation, each student follows his or her own paths of reasoning. In this case, the interaction is more monological than dialogical. For example, in Barron's (2003) study, each of the students in failed groups tried to present and

construct his or her own solutions for the problem. In asymmetrical situations, participants have no possibility to make an equal contribution to the discourse. Reasons may relate, for example, to knowledge (Dillenbourg, 1999) or status differences (Cohen, 1994). In their study, Kumpulainen and Mutanen (1999) distinguished between individualistic, domineering, and collaborative modes of interaction according to the perceived degree of co-construction.

The content and relational spaces are negotiated simultaneously and, thus, compete for limited attention. For example, if the relational space is more focused on competitive interaction or self-focused (individualistic) problem solving, it prevents the participants from gaining joint attention and mutual engagement, and from reaching a common ground on the same topic. At the same time, success in the content space requires success in the relational space. The content and relational spaces thus have a reciprocal relationship, being part of the same collaborative process, and are hard to separate.

Social Relationships in Relation to Collaboration

There is not much research about how students' preexisting relationships within their peer group influence the nature and quality of their interaction in collaborative contexts (Miell and MacDonald, 2000). The study of collaboration has focused more on interactions as opposed to relationships (Azmitia, 1998). However, it has been suggested that students' relationships affect their emotional and social responses to the cognitive working conditions, which show in their willingness to participate in collaborative learning contexts (Crook, 1999; Kutnick and Manson, 1998). Thus, processes and outcomes of collaboration are embedded within the larger context of peer relationships (Azmitia, 1998). Azmitia (2000) points out that collaboration-related research relying on problem-solving tasks that have one correct solution or can be solved through systematic hypothesis testing has contributed to a rosy, calm picture of collaboration placing emphasis on cognitive development. However, in more open-ended and ill-defined problems, collaboration is more stressful because there is no clear script on how to proceed. In these kinds of tasks, collaborators' personalities and relationships as well as the affective elements of interaction play an important role in managing collaboration.

Friendship

There are reports about the positive effects of friendship on collaboration (e.g., Hartup, 1996; Azmitia and Montgomery, 1993; MacDonald *et al.*, 2000). Azmitia and Montgomery (1993) found that collaboration between friends leads to more transactive discourse, greater equality in roles, and

larger increases in knowledge than collaborations between acquaintances. In their study, friends justified their proposals, elaborated on their partners' proposals more often, and also engaged in transactive conflicts more frequently than acquaintances did. In addition, MacDonald *et al.* (2000) found out that, in creative tasks, friends engaged in more transactive discussions than nonfriends, and their musical compositions were rated more highly than those of the latter. Hartup (1996) drew a synthesis on studies comparing friends and nonfriends during collaborative problem-solving tasks. According to these studies, friends tend to engage in more extensive discourse and task-oriented talk, offer suggestions more readily, and are more supportive and critical than nonfriends. In addition, mutuality is more evident and interaction is more positive and equally balanced between friends than between nonfriends. Thus, according to Hartup (1996), social interaction between friends is of the type that is considered to facilitate cognitive development.

However, Berndt *et al.* (1988) did not find differences in the processes and outcomes of the collaborations of friends and acquaintances. One possible reason for the controversy between different studies is that the varied nature and difficulty of tasks may show in differences in the processes and outcomes of the collaborations (Azmitia, 1998). In their study reported above, Azmitia and Montgomery (1993) found out that friends outperformed acquaintances in a posttest only on the most difficult tasks because most friend pairs were able to sustain and repair the collaboration in dealing with difficult tasks, whereas the acquaintances were not. In addition, MacDonald *et al.* (2000) suggested that, in open-ended creative tasks, nonfriends have more difficulties than friends because they lack the advantage of shared knowledge and accustomed patterns of interaction that would help them maintain interaction and construct knowledge.

The relationship between friendship and successful collaboration is suggested to be due to different reasons. According to Azmitia (1998), mutuality, trust, respect, equality, and fairness, often associated with friendship, are qualities that help friends to be attuned to each other's needs, goals, and points of view, and let them expose their views and also challenge each other. These qualities are beneficial in negotiating shared understandings. According to MacDonald *et al.* (2000), friends are used to establish and maintain a shared social reality in their everyday relationship and also to generate and develop ideas together. Thus, friends have a shared history to lean on (Crook, 1999). On the one hand, this shared history shows in automatized interaction routines that help maintain interaction even in highly demanding tasks (Azmitia, 1998); on the other hand, it shows as shared experiences and prior knowledge (Costin and Jones, 1992; Faulkner and Miell, 2004) that facilitate establishing a common ground (Clark, 1996). In addition, it has been suggested that friends are more motivated and willing to work together (Barron, 2003).

There are, however, age-related developmental differences in the friends' ability to collaborate (see Azmitia, 1998) as well as gender-related differences in the friends' quality of collaboration (e.g., Faulkner and Miell, 2004; Kutnick and Kington, 2005). For example, Kutnick and Kington (2005) found that girl friendship pairs outperformed boy friendship pairs in a scientific reasoning task at the primary level of education. The pupils' interviews revealed that the boys excluded school collaboration as a legitimate activity within the context of their friendships, whereas the girls did not. The boys' friendships were action oriented and based on activities with others outside the school classroom. The study demonstrated that male and female friendship pairs had distinct, culturally (gender related) defined approaches in their cognitive problem-solving activity. These approaches were tied to the experiences they shared with friends in the classrooms and outside the school (Kutnick and Kington, 2005). This is in accordance with Faulkner and Miell's (2004) suggestion that effective collaboration between friends occurs only when it is situated in an activity setting that is meaningful in the context of their relationship.

Status

Several authors (e.g., Dillenbourg, 1999; Baker, 2002) have argued that in order to be capable for true collaboration, the participants must play symmetrical roles in the conversation. They must have the same opportunity to participate, and their level of knowledge must broadly be the same (Dillenbourg, 1999). When the knowledge level among the participants is very different, it easily leads to different roles in the learning situation. These different roles, in turn, can have profound effects on the quality of interaction and learning (Basili and Sandford, 1991; Cohen, 1994; Linn and Burbules, 1993; Richmond and Striley, 1996). For example, Richmond and Striley (1996) found several leadership styles, each with different effects on group interaction. An alienating leader had a negative effect on students' interaction because the leader disregarded the input of others and restricted the discussion process. A democratic leader, however, prompted interaction owing to the open communicative atmosphere that he or she created.

Differences in the perceived academic ability or knowledge level show as academic status differences between students. Academic status is a powerful status characteristic in the classroom because of its obvious relevance to the classroom activities (Cohen, 1994). According to Cohen (1994), students with a higher status easily dominate group interaction and are more likely to be perceived as leaders. Knowledge differences do not even have to be real in the actual situation to raise differences in the roles assumed by the participants, as Cohen (1994) has noted. Differences in the persons' general academic status may

affect interaction; therefore, the power order of the group reflects the initial differences in status, even if the participants share the same level of knowledge in the actual situation, or if the task does not require the academic ability in question. Thus, students with academically high status are expected to be more competent than others, and this status may be generalized to a wide range of school tasks.

Peer status – that is, perceived attractiveness or popularity – may also act as a basis for inequalities in participation in the context of collaborative activity (Cohen, 1994). Popular children tend to get their voice better heard in the group work context. However, the study by Murphy and Faulkner (2000) with preschool children also demonstrated that unpopular children benefited from interacting with popular children. The former had more elaborated disagreements when interacting with the latter than when interacting with other unpopular children. Cohen (1994) relates popularity to academic status, but it has been found (Juvonen and Wenzel, 1996) that, at secondary-level education, popularity depends on qualities other than academic ability, whereas, at the primary level, popularity is often associated with academic ability. Social status factors such as gender can also affect interaction in the collaborative situation. For example, some studies have demonstrated that boys tend to dominate the work in science tasks (Petersen *et al.*, 1991) as well as in computer tasks (Underwood and Underwood, 1990) based on their alleged superiority compared to girls (Underwood and Underwood, 1990). There are contradictory results about the affect of gender *per se* on students' collaboration. Some studies indicate that the interaction of same-gender pairs is qualitatively better and more collaborative compared to mixed-gender pairs (Fitzpatrick and Hardman, 2000; Tolmie and Howe, 1993). Howe and Tolmie (1999) suggest that social unease occasioned by gender can have an influence on the qualitatively lower-level interaction of mixed-gender pairs. However, some studies also fail to demonstrate significant differences in interaction according to gender pairing (e.g., Howe and Tolmie, 1999). These mixed findings can be due to different reasons; a difference in tasks and instructions, in the way performance is measured, as well as a difference in wider classroom culture and context (Fitzpatrick and Hardman, 2000). In other words, these findings can be attributable to the difficulty of gaining context-free results.

Barron (2003) further argues that research on status has concentrated excessively on studying status as a static phenomenon. Therefore, such research has failed to reflect the complexity of interaction and account for dynamic shifts in students' power relations during interaction, as was observed in Barron's (2003) study. In addition, Arvaja *et al.* (2002) noticed in their case study on secondary school students' collaborative science task that the knowledge power held by one student was triggered only occasionally. Hence, it was dynamic in a sense that it did not turn into a permanent role, but was negotiated

throughout the students' activity. Knowledge asymmetry was manifested either in tutoring or a leadership role, which was also in relation with the students' friendship status. The student group consisted of four students: two boys and two girls. The girls were best friends, whereas the boys were classroom peers. It seemed that the non-constructive leadership occurred only when the whole group was present. Altogether, it seemed that when the girls were working with the boys, the social tension between group members contributed to hasty, nonreflective discussion and nonengagement with the task itself. The interaction between the girls was more equal when they were not working with the boys. Only the girls, who were friends, were able to really reason, explain, wonder, and argue, and were able to engage in the problem solving and the task at hand. The only asymmetrical interaction between the girls was tutoring, which, however, promoted collaboration and shared knowledge construction.

In addition, the nature of the task may affect the power relations of the group. According to Cohen (1994), complex tasks with ill-defined problems can be featured as group tasks. A group task is one that requires resources (e.g., knowledge and heuristic problem-solving strategies and skills) that no single individual possesses and is, therefore, probably unable to accomplish the task alone (Cohen, 1994). In group tasks, students are interdependent in a reciprocal fashion (Cohen, 1994). Thus, exchanging ideas and information is vital to success. However, problems with one identifiable correct answer could often be accomplished by single individuals and the interaction would be, in its nature, more like helping each other understand concepts without a need for deeper-level discourse. In addition, according to Chizhik (2001), a single-answer task more easily leads to one participant, perhaps a more knowledgeable person (Cohen, 1994), dominating the discussion. Instead, variable-answer tasks, which elicit knowledge from a wide subject domain, increase the possibility of many participants contributing to the discourse. In another study, Chizhik (1999) found out that gender differences in the participating group's working also diminished in variable-answer tasks.

Summary

Collaborative learning is a fashionable phenomenon nowadays; however, collaboration among students in various learning settings (e.g., in classrooms) is a much more complex phenomenon than has often been thought. While aiming to understand the diverse viewpoints to collaborative learning, we have to consider an extremely complex set of variables, that is, cognitive, social, emotional, motivational, and contextual ones, interacting with each other in a systemic and dynamic manner. This article has particularly focused on the social aspects of collaborative learning.

It has become clear that the line between individual and social processes of learning is blurring, and the main message of many researchers is that we should see individual minds in interaction with group understandings (Stahl, 2004). It is important to support not only the content, but also the social level of interaction (see Barron, 2003). It seems that learners face a dual problem space of this kind as they are supposed to work and learn collaboratively. Furthermore, collaborative situations reflect previous social activities, and are transformed by current interactions and projections of the future. In this process, social relationships deriving from friendship or status are also in a crucial role. For example, Azmitia (1998) has stated that qualities such as mutuality and trust, often associated with friendship, are beneficial in negotiating shared understanding.

Most of the results cited in this article come from studies where relationships – such as status or friendship – in relation to collaboration are explored experimentally by manipulating the group composition according to different status or friendship qualities. The gain for learning is measured in posttests at the individual level. These studies fail to reflect the complexity of interaction and dynamics in shifts in students' relations during interaction. There is a great need for studies that focus on social relationships from the sociocultural perspective, illuminating their dynamic, changing, and negotiated nature in the context of collaboration as well as their historical nature in the form of practices and relations (Arvaja, 2007).

See also: Children's Friendship; Peer Learning in the Classroom; Social Interaction and Learning.

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SELF-REGULATORY PROCESSES

Self-Concept in Learning: Reciprocal Effects Model
Between Academic Self-Concept and Academic Achievement

Social Practices in School Assessment and Their Impact
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Self-Efficacy Beliefs

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Self-Concept in Learning: Reciprocal Effects Model Between Academic Self-Concept and Academic Achievement

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Self-concept is one of the oldest and most important constructs in the social sciences, dating back to at least the seminal work by William James (1890/1963). Today, self-concept enhancement is a major goal in many fields, including education, child development, health, sport/exercise sciences, social services, and management. This concept is a multidimensional hierarchical construct with highly differentiated components such as academic, social, physical, and emotional self-concepts in addition to a global self-concept component. It is also an important mediating factor that facilitates the attainment of other desirable outcomes. Particularly in education settings, a positive academic self-concept (ASC) is both a highly desirable goal and a means of facilitating subsequent learning and other academic accomplishments.

Multidimensionality of Self-Concept

Definition of Self-Concept

Historically, self-concept measurement, theory, research, and application have been plagued by the poor quality of both theoretical models and self-concept measurement instruments (e.g., Shavelson *et al.*, 1976; Wells and Marwell, 1976; Wylie, 1974, 1979). In an attempt to remedy this situation, Shavelson *et al.* (1976) reviewed existing self-concept research and instruments, proposed a new theoretical model of self-concept, and provided a blueprint for the development of multidimensional self-concept instruments (see review by Marsh and Hattie, 1996).

Self-concept, broadly defined by Shavelson *et al.* (1976), is a person's self-perceptions formed through experience and interpretations of one's environment. It includes feelings of self-confidence, self-worth, self-acceptance, competence, and ability. It is influenced especially by evaluations by significant others, reinforcements, and attributions for one's own behavior. Self-concept is not an entity within the person, but a hypothetical construct that is potentially useful in understanding individuals and how they behave. Shavelson *et al.* noted that self-concept is important both as an outcome and as a mediating variable that helps to explain other outcomes. Self-perceptions influence the way important outcomes and these outcomes in turn influence one's self-perceptions.

Multidimensional, Hierarchical Model of Self-Concept

Shavelson *et al.* (1976) identified seven features that were critical to their definition of the self-concept construct. The most important for present purposes are that self-concept is multifaceted and hierarchically organized with perceptions of personal behavior in specific situations at the base of the hierarchy, inferences about self in broader domains (e.g., social, physical, and academic) at the middle of the hierarchy, and global self-concept (also known as self-esteem) at the apex (see **Figure 1**).

Remarkably, at the time Shavelson *et al.* proposed their model, there was little support for the multidimensionality of self-concept. The resistance to the multidimensional aspect of the model in particular was so strong that leading researchers of that period (e.g., Coopersmith, 1967; Marx and Winne, 1978) argued that self-concept was either a unidimensional construct or that the facets of self-concept were dominated so heavily by a general factor that they could not be differentiated adequately. Recently, Byrne (1984: 449–450) noted that: "Many consider this inability to attain discriminant validity among the dimensions of SC to be one of the major complexities facing SC researchers today." In retrospect – as clearly articulated by Shavelson *et al.* (1976) – the renaissance of self-concept research was floundering due to the lack of a solid basis of measurement to support it.

However, the Shavelson *et al.* model provided a blueprint for the development of a whole new generation of multidimensional self-concept instruments that have provided overwhelming support for the multidimensionality of self-concept. There are several widely used inventories for measuring multiple dimensions of self-concept that, to some extent, differ in the self-concept dimensions included (e.g., Bracken, 1996; Harter, 1998; Marsh, 1990b; see review by Byrne, 1996b). Typically, however, these instruments include at least one or more factors representing the specific academic (e.g., mathematical and verbal self-concept), social (e.g., relations with friends and relations with parents), physical (e.g., physical competence and attractiveness), and emotional domains of self-concept, and a global self-esteem scale as posited in the Shavelson *et al.* (1976) model. Among the various instruments, external reviews (see Boyle, 1994; Byrne, 1996b;

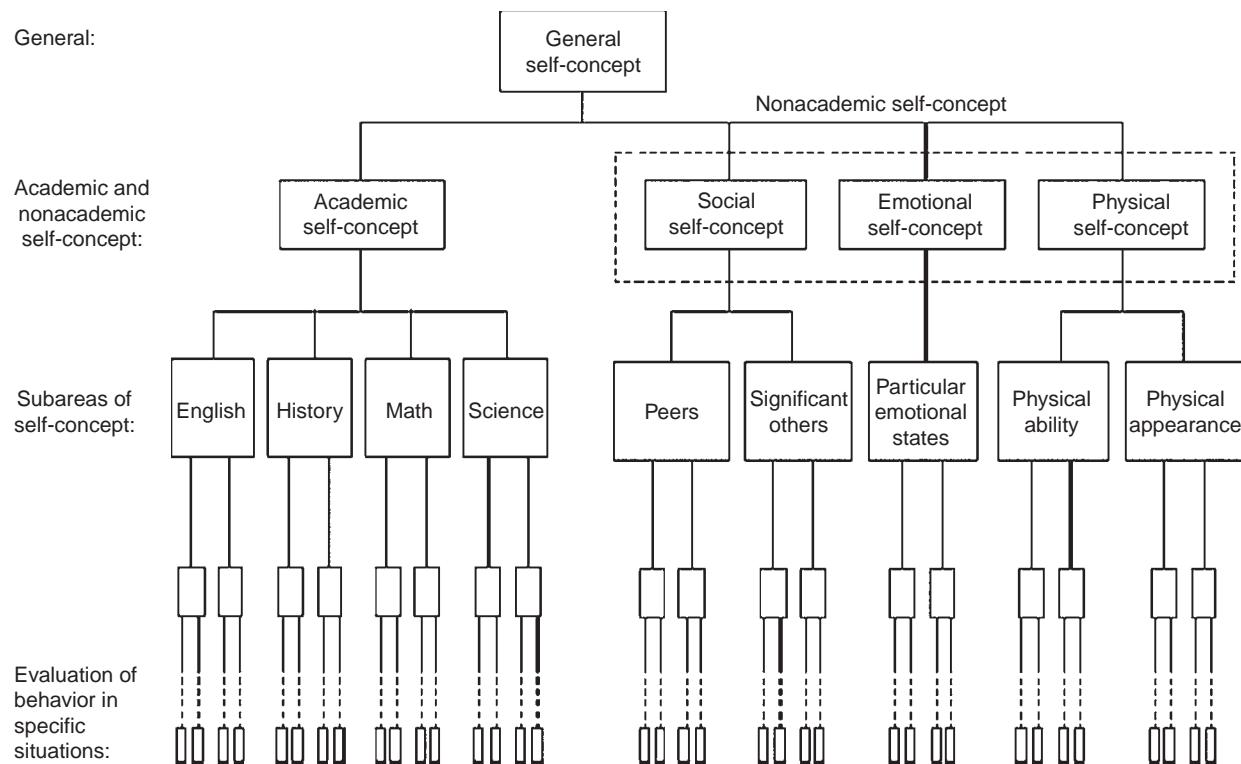


Figure 1 Pictorial representation of the multidimensional, hierarchical model of self-concept posited by Shavelson *et al.* (1976) and Marsh and Shavelson (1985). The box consisting of dashed lines around the nonacademic self-concept factors is used to distinguish these from the academic self-concept factors, but does not imply that there is a single higher-order nonacademic factor, as is hypothesized for the academic factors. The unlabeled boxes in the bottom of the hierarchy are used to show that the model posits additional levels in the hierarchy and even more domain-specific components of self-concept than those that are explicitly presented (e.g., mathematical self-concept might be broken into different mathematical topics such as algebra, trigonometry, or calculus, and each of these could be further subdivided into specific components relevant to each of the mathematical subjects). Reprinted from Shavelson, R. J., Hubner, J. J., and Stanton, G. C. (1976). Validation of construct interpretations. *Review of Educational Research* **46**, 413.

Hattie, 1992; Wylie, 1989) suggest that the Self Description Questionnaire (SDQ) instruments are the strongest multidimensional self-concept instruments for children (SDQI), adolescents (SDQII), and young adults (SDQIII), respectively. In less than a decade, the accepted wisdom in self-concept research moved from a unidimensional perspective in which the multidimensionality of self-concept was all but dismissed to a multidimensional perspective that was particularly embraced in educational research (see reviews by Marsh and Hattie, 1996; also see Byrne, 1996a, 1996b; 2002). The hierarchical aspect of the Shavelson model linked these two approaches, including both a global component of self-concept at the apex of the model and increasingly differentiated multiple dimensions of self-concept at lower levels of the model.

Marsh and Craven (2006) argued that the acceptance of a multidimensional rather than a unidimensional perspective of self-concept varies substantially across various social science disciplines and within subdisciplines in psychology. However, its broadest acceptance and strongest support comes from educational psychology with its focus on ASC (Marsh, 1993) and its relation to academic

achievement, school grades, student learning, and other academic outcomes.

Support for Multidimensionality: Correlations between ASC and Achievement

Various measures of academic achievement are substantially correlated to corresponding measures of ASC, but are nearly uncorrelated (or even negatively correlated) with nonacademic components of self-concept and self-esteem (Marsh, 1993; Marsh and Craven, 2006). Thus, for example, Marsh and O'Neill (1984) related mathematics and English achievement to responses by high school students to the SDQIII instrument. Mathematics achievement correlated 0.58, 0.27, and 0.11 with math, general academic, and verbal self-concepts, respectively, whereas English achievement correlated 0.42, 0.24, and 0.19 with verbal, general academic, and math self-concepts, respectively. Remarkably, none of the nine nonacademic scales – including global self-esteem – was significantly related to either of the achievement scores. Demonstrating the generalizability of these effects, Marsh *et al.*, (1988)

found that correlations between math and English self-concepts based on each of three different instruments were close to zero, that math achievement was substantially correlated with math self-concept but not English self-concept, and that English achievement is substantially correlated with English self-concept but not math self-concept. Similarly, Marsh (1992) established that relations between ASCs in eight specific school subjects were substantially related to school grades in the matching school subjects ($rs = 0.45\text{--}0.70$), offering support for the external validity of specific facets of ASC. In contrast, self-esteem was nearly uncorrelated with school grades in all the school subjects, indicating that it had no validity in relation to this criterion. More recently, Marsh *et al.* (2006) demonstrated a predictable pattern of substantial relations between eight academic criterion variables (grades, test scores, and coursework selection in different school subjects) and corresponding ASCs, whereas self-esteem was nearly uncorrelated with all these criteria ($rs = -0.03$ to $0.05 >$).

Although self-concept and school grades are substantially correlated, there are also important differences between the two constructs. Thus, for example, academic achievements in different school subjects are substantially correlated, indicating a strong hierarchical ordering in which much of the variance in specific subject areas can be explained by a global achievement factor (or intelligence quotient (IQ)). In contrast, self-concepts in different school subjects are highly differentiated. In fact, even though math and verbal achievement are highly correlated (rs of $0.5\text{--}0.8$), math and verbal self-concepts are nearly uncorrelated. Marsh and Hau (2004) demonstrated support for a theoretical model designed to explain this juxtaposition between ASC and achievement domains generalized across nationally representative samples of students from 26 different countries. This extreme differentiation among math and verbal self-concepts also led to the Marsh/Shavelson revision of the original Shavelson model in which self-concepts in core academic subjects are represented by two higher-order ASC factors (math/academic and verbal/academic) rather than one (Marsh, 1992; Marsh *et al.*, 1988).

Furthermore, consistent with this distinction between self-concept and achievements in different school subjects are relations between ASC, achievement, and other academic criteria. For example, Marsh and Yeung (1997) demonstrated that whereas self-concepts in different school subjects and matching school grades were substantially correlated, the specific components of ASC predicted subsequent coursework selection much better than did school grades or more general components of self-concept. These results provide empirical evidence calling into question the usefulness of a general self-esteem construct in educational psychology research, and offer strong support for the multidimensional perspective. In summary, ASC and achievement are not only systematically related, but also very distinct constructs.

ASC/Learning Relationship: Reciprocal Effects Model

Causal-Ordering ASC and Achievement: Reciprocal Effects Model

Do changes in ASC lead to changes in subsequent academic performance? Correlational studies provide convincing evidence of the strong relations between ASC and various measures of academic accomplishment, achievement, and learning. However, a much more demanding question is whether ASC causes achievement or achievement causes ASC. Historically, the causal ordering of self-concept and performance has been, perhaps, the most vexing question in self-concept research (Byrne, 1984; Marsh, 1993; Marsh and Craven, 2006). This critical question has important theoretical and practical implications, and has been the focus of considerable research – particularly in educational settings.

Byrne (1984) emphasized that much of the interest in the ASC/achievement relation stems from the belief that ASC has motivational properties such that changes in ASC will lead to changes in subsequent academic achievement. As self-concept and academic achievement are not readily amenable to experimental manipulations, most research relies on longitudinal panel data in which both self-concept and achievement are measured on at least two occasions (i.e., a two-wave, two-variable design) and preferably three or more (see **Figure 2**). Calsyn and Kenny (1977) contrasted self-enhancement and skill development models of this relation. The self-enhancement model posits self-concept as a primary determinant of academic achievement (i.e., self-concept \Rightarrow achievement) and would support self-concept enhancement interventions. In contrast, the skill development model implies that ASC emerges principally as a consequence of academic achievement (i.e., achievement \Rightarrow self-concept) so that the best way to enhance ASC would be to develop stronger academic skills.

In a review and critique of this research, Marsh (1990a, 1990b, 1993) argued that much of this research was methodologically unsound and inconsistent with self-concept theory (Marsh *et al.*, 1999). He emphasized that according to both common sense and theory, prior academic achievement was one determinant of ASC. Hence, the critical question was whether there also existed a significant path from prior ASC to subsequent achievement – regardless of whether or not this path was larger than the path from prior academic achievement to subsequent ASC. Marsh (1990a) further argued that a more realistic compromise between the self-enhancement and skill development models was a reciprocal effects model (REM) in which prior self-concept affects subsequent achievement and prior achievement affects subsequent self-concept (Marsh and Craven, 2006; Marsh *et al.*, 1999). He further argued that this early emphasis on an either/or model of causal ordering was

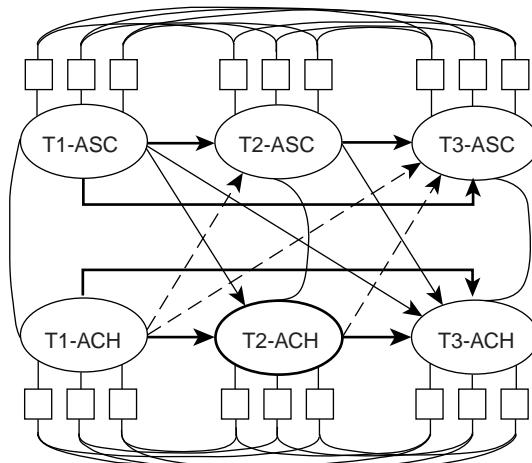


Figure 2 Prototype causal-ordering model for testing self-enhancement, skill development, and reciprocal effects models. In this full-forward, multiwave, multivariable model, multiple indicators of academic self-concept (ASC) and achievement (ACH) are collected in three successive waves (T1, T2, and T3). Each latent construct (represented by ovals) has paths leading to all latent constructs in subsequent waves. Within each wave, academic self-concept and achievement are assumed to be correlated; in the first wave, this correlation is a covariance between two latent constructs, and in subsequent waves, it is a covariance between residual factors. Curved lines at the top and bottom of the figure reflect correlated uniqueness between responses to the same measured variable (represented by boxes) collected on different occasions. Paths connecting the same variable on multiple occasions reflect stability (the solid gray paths), but these coefficients typically differ from the corresponding test-retest correlations (which do not include the effects of other variables). Dashed lines reflect effects of prior achievement on subsequent self-concept, whereas solid black lines reflect the effects of prior self-concept on subsequent achievement.

due largely to limitations in statistical techniques for testing these models in the 1980s that are no longer relevant.

Bringing together stronger theoretical and statistical bases for addressing these issues, Marsh (1990a) proposed the REM of ASC. **Figure 2** presents a prototypical REM designed to test the causal ordering of ASC and achievement. Self-concept and academic achievement are each measured at least 3 times in this longitudinal panel design. The critical issue is whether there are statistically significant paths leading from prior self-concept to subsequent achievement (in support of self-enhancement predictions) and from prior achievement to subsequent self-concept (in support of skill development predictions). Support for the REM requires that both sets of paths are statistically significant; however, from the perspective of self-concept theory and practice, the linkages from prior self-concept to subsequent achievement are particularly important.

A growing body of research, reviewed by Marsh and Craven (2006), has established support for the REM of relations between ASC and academic achievement (Marsh

et al., 1999). In a recent meta-analysis of relevant research, Valentine *et al.* (2004) also concluded that there was clear support for predictions based on the REM over those derived from self-enhancement and skill development models.

This reciprocal pattern of relations between self-concept and performance posited in the REM is also represented in many other theoretical accounts of self-concept and related self-belief constructs (e.g., Bandura, 1997; Byrne, 2002; Eccles, 1983; Eccles and Wigfield, 2002; Harter, 1998, 1999; Hattie, 1992; Skaalvik, 1997; Valentine and DuBois, 2005; Valentine *et al.*, 2004; Wigfield and Eccles, 2002) as well as in the broader themes of reciprocal patterns of relation in developmental psychology (e.g., Lerner, 1982, 1996). Thus, for example, expectancy-value theory (Eccles, 1983; Eccles and Wigfield, 2002) hypothesized academic self-beliefs to be a function of prior academic successes and to affect subsequent academic success directly or indirectly through their influence on other mediating constructs. More generally, in their review of theoretical research and meta-analysis of empirical research, Valentine and DuBois (2005) concluded that the posited reciprocal effects relating academic self-beliefs and achievement are consistent with theories of learning and human development that view the self as a causal agent (e.g., Bandura, 1997; Carver and Scheier, 1981; Deci and Ryan, 1985). Indeed, Valentine and DuBois concluded that support for the REM was equally strong for domain-specific ratings of ASC and self-efficacy.

Extensions of the REM

In their review of theoretical and empirical support for the REM, Marsh *et al.* (1999; also see Marsh and Craven (2006)) argued for the need for further research to test the generalizability of the REM over nationality and culture (support was based largely on studies done in Western, English-speaking countries), age (support was based primarily on research with adolescents), and content area (research was based largely on studies in a limited number of academic domains – particularly mathematics).

Cross-cultural generalizability

Partly in response to Marsh *et al.* (1999), recent research demonstrated that this support for the REM of ASC and achievement generalized to different cultural/national settings in a large nationally representative sample of Hong Kong students (Marsh *et al.*, 2002) and large samples of East and West German students at the time of the fall of the Berlin Wall (Marsh and Köller, 2003; Marsh *et al.*, 2001). Support for the generalizability also comes from research based on French-speaking Canadian primary students (Guay *et al.*, 2003) and the German high school students (Marsh *et al.*, 2005). Hence, there is strong cross-national and cross-cultural support for the REM.

Generalizability over age

Based on developmental theory, some researchers have suggested that the reciprocal pattern of relations in support of the REM found with adolescents is unlikely to generalize to preadolescents (see Wigfield and Karpathian, 1991). However, two reviews of this literature (Marsh *et al.*, 1999; Valentine *et al.*, 2004) concluded that there was not sufficient good-quality research with young children to support this conclusion. Guay *et al.* (2003) addressed this issue about developmental trends in REM research. They used a multicohort–multioccasion design for responses by students in grades 2, 3, and 4 (i.e., three age cohorts aged 8–10 years of age, each with three measurement occasions). The structural equation model (SEM) for the total sample supported an REM for the first two waves of data (paths leading from prior self-concept to subsequent achievement, and from prior achievement to subsequent self-concept) and a self-enhancement effect (paths leading prior self-concept to subsequent achievement) between the second and the third waves. This pattern was replicated in tests of the invariance of the SEM across the three age cohorts, demonstrating support for the generalizability of the REM across these preadolescent ages.

Generalizability to the physical domain

Although there is a growing body of research based on ASC and academic achievement, Marsh *et al.* (1999) noted that there were few tests in nonacademic domains. More recently, Marsh and colleagues have undertaken a number of studies evaluating the generalizability of the REM to the physical domain for both general populations and elite athletes.

Marsh *et al.* (2005) evaluated the generalizability of the REM for gymnastics self-concept and gymnastics performance (independently evaluated by expert judges viewing videotapes of a standardized performance test). Consistent with *a priori* predictions in support of the REM, the effect of T1 gymnastics self-concept on T2 gymnastics performance (0.20) and the effect of T1 gymnastics performance on T2 gymnastics self-concept (0.14) were both highly significant. Consistent with the REM, gymnastics self-concept and gymnastics performance were both determinants and consequences of each other.

Recognizing the critical importance of health-related physical self-concept in children and adolescents, Marsh *et al.* (2006) adapted the REM in a study of the causal ordering of physical self-concept and exercise behavior. The study was based on a large sample of primary and secondary Greek physical education students (2786 students, 200 classes, 67 teachers) and data collected early (T1) and late (T2) in the school year. There was clear support for the REM as there were significant effects of T1 physical self-concept on T2 exercise behavior and T1 exercise behavior on T1 physical

self-concept. Physical self-concept is both an effect and a cause of exercise behavior.

Does physical self-concept influence subsequent physical performance during preadolescence? Marsh *et al.* (in press) combined the need to test the generalizability of the REM with children and in the physical domain. They used longitudinal data for young boys and girls ($N=1135$; M age = 9.67 years) to show that physical self-concept is both a cause and a consequence of physical accomplishments. After controlling for prior physical performance (physical-performance-based test and teacher assessments in grade 3, primary school), physical self-concept had a positive effect on subsequent physical performance in both grade 4 and, following the transition to secondary school, grade 6. Despite the fact that physical self-concept is a gender-stereotyped construct (with boys having systematically higher physical self-concepts; Crain, 1996; Marsh, 1989), support for the REM generalized over gender. In addition, gender differences favoring boys in grades 4 and 6 were largely mediated by prior differences in grade 3. Coupled with previous REM research based largely on studies of adolescents in the academic domain, this study supports the REM's generalizability over gender, self-concept domain, preadolescent ages, and the transition from primary to secondary school.

How well does support for the generalizability of the REM generalize to elite athletes? Marsh and Perry (2005) tested the effects of sport self-concept on subsequent performance in 270 elite swimmers from 30 countries participating in the Pan Pacific Swimming Championships and the World Short Course Championships. Whereas subsequent championship performance was highly related to prior personal best performances ($r=0.90$), SEMs demonstrated that elite athlete self-concept contributed significantly to the prediction of subsequent championship performance, explaining approximately 10% of the residual variance after controlling for personal best performances. As each swimmer typically competed in at least two different events, we were able to show that support for the REM was nearly identical for both events.

Marsh and Craven versus Baumeister *et al.* Debate

Support for the importance of self-concept and the REM is part of a revolution sweeping psychology, one that emphasizes a positive psychology focusing on how healthy, normal, and exceptional individuals can get the most from life (e.g., Seligman and Csikszentmihalyi, 2000). Positive self-beliefs are at the heart of this revolution (Hunter and Csikszentmihalyi, 2003; Marsh and Craven, 2006).

In a potentially serious threat both to this positive psychology movement and to the REM, Baumeister *et al.* (2003, 2005) challenged the prevailing optimistic perspective of the value of positive self-beliefs in a highly

influential review commissioned for *Psychological Science in the Public Interest*. In their reviews, they posed the question: "Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles?" Drawing a negative conclusion to their question, Baumeister *et al.* (2003) concluded that "self-esteem per se is not the social panacea that many people hoped it was" (p. 38), a point reiterated by Baumeister *et al.* (2005) in their *Scientific American* article in which they concluded "that efforts to boost people's self-esteem are of little value in fostering academic achievement or preventing undesirable behavior" (p. 84).

Particularly in relation to models of causal relations between self-concept and academic achievement – a major focus of the Baumeister *et al.* (2003, 2005) reviews – Marsh and Craven (2006) provided convincing evidence for the consistent positive effects of ASC on subsequent achievement after controlling the effects of prior achievement. They argued that conclusions drawn by Baumeister and colleagues were based largely on research studies, statistical methodology, and theoretical conceptualizations of self-concept that are no longer current. Although there were many points of agreement between the reviews by Marsh and Craven (2006) and those by Baumeister and colleagues (e.g., the need for longitudinal studies, cross-lagged designs, and appropriate statistical analyses), they differed particularly in relation to Baumeister *et al.*'s sole reliance on self-esteem and an implicit unidimensional perspective of self-concept compared to the explicitly multidimensional perspective taken by Marsh and Craven. Integrating the two apparently contradictory perspectives, Marsh and Craven argued that it was quite reasonable and consistent with their multidimensional perspective that there are almost no reciprocal relations between academic achievement and self-esteem (as reported by Baumesiter *et al.*), whereas there are consistent reciprocal relations between ASC and achievement (as reported by Marsh and Craven). Indeed, there was almost no overlap between the older, multiple regression studies of self-esteem considered by Baumeister *et al.* and the more recent SEM studies of ASC emphasized by Marsh and Craven. Consistent with this rapprochement, Valentine and Dubois' (2005) meta-analysis showed that the effect on subsequent school performance was stronger for academic self-beliefs, such as ASC, than for more global self-belief constructs, such as global self-esteem, and even stronger when the self-belief construct logically matched the achievement construct in terms of domain specificity (i.e., mathematics achievement and math self-concept).

Summary and Implications

The results of the causal modeling studies in particular provide a clear affirmative answer to the question:

Do changes in ASC lead to changes in subsequent academic achievement? This research is critically important in that it has established that increases in ASC lead to increases in subsequent academic achievement and other desirable educational outcomes. Hence, not only is self-concept an important outcome variable in itself, but it also plays a central role in mediating the effects of other desirable educational outcomes. These findings have significant implications for international educational policy and practice. It is important to emphasize that the direction of causality between ASC and achievement also has very important practical implications for educators. If the direction of causality were from ASC to achievement (the self-enhancement model), then teachers might be justified in placing more effort into enhancing students' self-concepts rather than fostering achievement. On the other hand, if the direction of causality were from achievement to self-concept (the skill development model), then teachers should focus primarily on improving academic skills as the best way to improve self-concept. In contrast to both these apparently overly simplistic (either-or) models, the REM implies that ASC and academic achievement are reciprocally related and mutually reinforcing. Improved ASCs will lead to better achievement and improved achievement will lead to better ASCs. For example, if teachers enhance students' ASCs without improving achievement, then the gains in self-concept are likely to be short lived. However, if teachers improve students' academic achievement without also fostering students' self-beliefs in their academic capabilities, then the achievement gains are also unlikely to be long lasting. If teachers focus on either one of these constructs to the exclusion of the other, then both are likely to suffer. Hence, according to the REM, teachers should strive to simultaneously improve both ASC and achievement.

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Social Practices in School Assessment and Their Impact on Learner Identities

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Introduction

In a review of sociocultural aspects of assessment, Gipps (1999) calls for more interpretive studies of the social world of the classroom. This contribution reviews work of this sort and offers a conceptualization of the factors in play. But why is this approach of consequence?

Accounts of the history of assessment practices show its roots in the selection and certification processes which were developed as national requirements for personnel standards emerged. Indeed, the first examinations are believed to date from the Han dynasty in China (206 BC to AD 220) and were used to select staff for government service. In seventeenth-century Europe, the Jesuits introduced competitive examinations within their schools and these became widely established in the late eighteenth and early nineteenth centuries as nation-states industrialized. The need for commonly understood and dependable standards of skill and knowledge in workplaces and the professions grew. Mass testing for service in the armed forces was thoroughly established by the two world wars of the first-half of the twentieth century, while the second-half saw school-outcome exams regulating entry with increasing precision to employment and more advanced study. In the twenty-first century, we now have many international standards and the market for specialized personnel is global.

Codified procedures and technologies for testing and assessment developed alongside these historic needs and applications. Fueled by early educational psychology, for instance, by studies of mental capacities and of intelligence quotient (IQ), these offered a scientific legitimization. Testing could be objective, valid, and reliable. People and their attributes and capabilities could be measured with accuracy. Examinations of various sorts thus provided an appropriate basis for decision making in the public interest. Such taken-for-granted confidence gave rise to a technical discourse of assessment in which required ends (e.g., practices of grading, comparing, and selecting individuals or schools on the basis of test scores) were not generally in dispute. Rather, the focus of concern became the means, whereby given ends could be achieved as fairly and objectively as possible. Within such a discourse, technicalities concerned with test validity and reliability, criterion and norm referencing, and so on tend to prevail. Such a discourse is thus about maintaining and improving

confidence in systems of assessment and results; thus, ultimately, legitimizing the uses to which they are put.

A contemporary educational critique of technician assessment reflects concern with its consequences for learning itself. In particular, as this encyclopedia demonstrates, the significance of formative feedback as an integral part of teaching-learning processes can hardly be underestimated. Less constructively, the same is true of the capacity of high-stakes assessment to distort the curriculum and classroom practices. In any event, assessment as an integral part of teaching and learning processes, rather than simply as a source of input and output data, is now generating an important new discourse and body of knowledge. This directs attention to the social processes through which assessment is manifest.

Sociologists, such as Broadfoot (1996), have argued that assessment has a primary rationale in controlling access to positions in society. It is thus seen as a mechanism through which power and control is exercised and a means of social reproduction. In this analysis, testing and assessment are far from neutral or objective. Rather, they systematically enable and disable, enhance and retard. The sociological discourse of assessment also draws on social-psychological, anthropological, and some post-modern studies. It thus analyzes how, as well as having educational purposes, assessment fulfills a range of political and social functions within modern societies. These wider functions are concerned with social differentiation and reproduction, social control and the legitimizing of particular forms of knowledge and culture of socially powerful groups. In this, the discourse has a critical role in examining some of the myths and assumptions embedded in the activity of educational testing. It critiques the science of testing and offers insights into the fact that assessment, from the most formal to the most informal, takes place within social contexts. Assessment is conducted on, by, and for inherently social actors (Wiliam, 1997: 396) and so the social and cultural values, perceptions, interpretations, and power relations of assessors and assessed carry important implications for processes and outcomes. Sociological analysis is therefore particularly concerned with the social impact of assessment and the perpetuation of educational and social disparity, and its cumulative affects in shaping ways in which individuals and groups in society come to be seen, and to see themselves (Filer, 1995).

We have briefly reviewed assessment in terms of its historical evolution and its social consequence. We have also considered the technical, educational, and sociological discourses associated with it. However, in this contribution, our concern is mainly with the latter, sociological discourse, and with some of the ways in which it serves to illuminate aspects of those technical and educational discourses. In particular, we focus on a somewhat neglected dimension concerning the impact on individuals of assessment policies, procedures, and practices, and some of their hidden, as well as their taken-for-granted, roles in everyday schooling.

Assessment as a Social Process and Product

Assessment is not limited to the formal testing, grading, and classification of students. More expansively, the term also concerns ongoing, formative, and diagnostic judgments, day-to-day marking and recording, and numerous informal, often implicit, evaluations made of students' work, progress, and potential. It is also important to remember that many assessments explicitly or implicitly embody a number of social, emotional, and physical characteristics of students. Thus an assortment of behavioral, attitudinal, socioeconomic, cultural, and family characteristics often constitutes a social diagnosis in accounting for students' failure to make satisfactory progress or fulfill their potential.

But how does this occur? What social processes have this effect? Are assessment results really a social product? How can we make sense of these issues? Exploration of assessment as a lived experience is particularly important to this new strand of work. Thus, we are concerned with the sociocultural interpretations which pupils and teachers bring to their interaction, and to the differentiating consequences of classroom processes. There then follows the issue of how assessment outcomes are interpreted, contested, or otherwise mediated by learners and significant others and how the consequences of such outcomes are incorporated into future lives.

In recent years, we have begun to explore how a sociology of assessment could tackle such issues. A major source is Filer's (2000) edited collection, *Assessment: Social Practice and Social Product*, which identifies key themes within a sociological discourse of educational assessment and offers expert contributions to illuminate them. Another source is our collaborative theoretical development within *The Social World of Pupil Assessment* (Filer and Pollard, 2000) on which we draw below.

We will take each element of this model in turn:

- *When and where is the assessment taking place?* As we have seen, assessment policies, requirements, and prescriptions are culturally, structurally, and politically embedded in particular societies at particular times.

Comparative and historical studies have demonstrated significant variations over time and place, but it is also the case that modern, technologically and competitively driven societies are showing remarkable convergence in deploying the results of educational assessments as an evaluative and accountability device for the modern centralist state. We thus locate our analysis of social influences on assessment within specific sociocultural contexts of state policy, region, and community. That is to say, we ask the question, "Where and when is the assessment taking place?" In the case-study schools in which we carried out ethnographic empirical research over a 7-year period in the early 1990s, the contexts in question were those of two southern English primary schools serving what we would contrast as white, middle-class, and skilled working-class families. In these case studies, we were particularly concerned with the introduction of teacher assessment (TA) and standard assessment tasks and tests (SATs) into primary schools in England. Over the period, tests, administration, marking, and moderation procedures were introduced and standardized. Results were scrutinized from year to year to ensure that consistent standards were being maintained. Through such processes, assessment practices were legitimated and assumptions of impartial objectivity were established.

- *Who is being assessed?* This question focuses on the identity of the learner being assessed. We see self-perceptions held by individuals and judgments made about individuals as being inextricably linked to the social relationships through which they live their lives. Indeed, we argue that we can only make sense of individuals and their learning within the context of that dynamic relationship with the wider world. Of course, there are factors that are internal to the individual in terms of capacities and potentials. However, the realization of a pupil's capacity and potential is, to a very significant extent, a product of external social relationships and cultural circumstances, among which we can count the processes and outcomes of assessment, in all its various forms. In our case studies, we observed, year on year, formalized and informal representations of children as social beings, as learners, and as pupils. The succession of objective, highly personalized, and invariably confident accounts were, of course, very powerful in shaping pupils' emerging and ongoing classroom and learning identities, as well as their relationships with parents and peers. Equally inevitably, however, those assessments were partial and contingent, obscuring the ways in which individual behaviors, relationships, attitudes to work, and perceived intelligences were, in part, products of the social, emotional, and organizational aspects of classroom life that teachers themselves created. Despite the confidence that most primary teachers held regarding their

all-round knowledge of individual pupils, we found it is extremely problematic for a teacher to know the whole child for assessment purposes – as we illustrate later in this article through the story of a pupil, Elizabeth, and her primary-school career.

- *Who is assessing?* Having argued that pupil identity can only be understood in context, we clearly need to focus on teachers, since they are undoubtedly the most powerful classroom participants with whom pupils must interact. In particular, we need a sociological conception of pedagogy and its link to each teacher's own sense of personal identity. For this, we deployed the concept of coping strategy (Woods, 1977; Pollard, 1982) and traced how satisfying role expectations and the constant pressures of teaching must be balanced with maintaining a sense of personal integrity and fulfillment. In the immediacy of classroom dynamics, this can be seen as teachers juggle with the immediate pressures they face. At the level of the school, it is played out through negotiation between different interest groups and the formation of taken-for-granted institutional assumptions. We traced how teachers in the case-study schools coped with the national curriculum and assessment requirements which progressively challenged their autonomy and traditional practices through the 1990s. A case study of one teacher, Marie Tucker, and her classroom practice demonstrated the detailed application of this analysis. In particular, it shows how her coping strategies, classroom organization, and associated pedagogies produced particular contexts with which pupils, in turn, had to cope. In particular, Mrs Tucker prided herself on her reputation for maintaining classroom order and routine, and for being good with problem children. Indeed, she routinely perceived and assessed pupils in terms of their adaptation to her personal strategic criteria. Inevitably, requirement for new classroom and assessment practices constituted a very real threat to Mrs Tucker's ability to maintain her established order and routine. At the same time, she began to perceive her many problem children, less as a source of professional pride, and more in terms of their threat to her grip on classroom control, and to the reputation she was proud of – something rather different from assessment based on objective performance.
- *What is being assessed?* An official answer to such a question might point to the subject content of a test, or to listed criteria of judgment, and would draw conclusions in terms of the attainment of pupils. More colloquially, inferences about the particular abilities of children may be legitimated by faith in the objectivity and categoric techniques of standardized assessment. In our analysis, we argued that such confident conclusions are misplaced because pupil knowledge, skills, and understandings are embedded in particular, and often

conflicting, sociocultural understandings and are further conditioned by factors such as gender, ethnicity, and social class. We particularly focused on the influence of peer-group relationships and the ways in which peer culture and the sociocultural identity of each pupil can condition performance. Thus, while pupils' subject knowledge, skill, or understanding may seem to be objectively revealed by the neutral, standardization technique of a test or by a classroom task or teacher questioning, tests and tasks also reveal the facilitation or constraint of sociocultural influences and forms of understanding. We illustrated this proposition through analysis of a year-3 news session at Albert Park Primary School. This showed how classroom meanings were created through interaction of circumstances, strategies, and identities. In particular, it showed how language was used to satisfy pupil agendas for entertainment, novelty value, and peer status in ways that were often in conflict with teacher-led instruction or approval. Assessment, the analysis suggests, can thus never tap pure knowledge or capability – any result will also always reflect the wider sociocultural circumstances of its production. Assessment is an interpretive process. For this reason, beyond academic subject matter, we must ask what else is being assessed?

- *How does assessment function in classrooms?* Our analysis foregrounds the links between assessment and other sociologically important influences on classroom life – ideology, language, and culture. As a whole, these factors are played out through particular power relations between teachers and pupils and have significant consequences for social differentiation. We explored these ideas by drawing on some of Bernstein's (2000) work. This highlights the ways in which classroom language is conditioned by patterns and forms of control, which are embedded in teachers' routine and everyday practices. The consequence is that it is not possible for teachers to be neutral either in their impact on pupil performance or in their assessment of pupil performance. We show how, irrespective of intentions, each teacher generates a particular set of circumstances in which interaction with each child takes place, and which will affect each child differentially. The scope for variability in the overall effect is enormous.
- *How are assessments interpreted and mediated?* Assessments are produced and delivered within networks of social relationships. We thus need to consider the audiences of assessment and, in school contexts, this requires particular reference to families and to peers. These are the major significant others in children's lives and we therefore traced their influence throughout the 7 years of schooling in the case-study primary schools. More specifically, we considered how families interpret, mediate, and give meaning to assessment outcomes, so that their impact on their child is shaped

and filtered. Once again, we found that the outcomes of assessment cannot be seen as categoric and direct in their consequence. Rather, their meaning is malleable and is likely to be drawn into existing frames of reference, relationships, and patterns of social interaction. For each learner, this is an extremely important process in the development of further phases of their personal narrative and in the construction of identity.

Overall, in relation to each of the major questions set out in the simple, cyclical model in **Figure 1**, we emphasize the influence of social factors on assessment. Learner, assessor, focus, process, and interpretation are all embedded in their sociocultural context and caught up in webs of social relationships. In such circumstances, we believe that the technical objectivity of assessment is a myth too far.

The Case of Elizabeth

We can illustrate the social processes and products of assessment through the case study of a young learner, Elizabeth – the only child of Eleanor and John Barnes, living in an immaculately kept, small, modern terraced house in the area of skilled, working-class families served by Albert Park Primary School. How did school assessment influence her life?

We described Elizabeth's school career at some length in *The Social World of Pupil Assessment* and recorded, year on year, her emerging identity and self-esteem as a pupil and as a girl. We saw her evolving classroom status and relationships among teachers, peers, and within the family, and her evolving approaches to academic tasks from

age 5 to age 11. Elizabeth was a lively child with a strong will. However, while her classroom playfulness and boldness allowed her to develop an attractive identity among her peers, her parents and many of teachers repeatedly expressed their disapproval of these aspects of her performance as a pupil and as a girl. These social and behavioral outcomes developed in a dynamic relationship with assessment outcomes concerning attainment and progress levels, etc. These in turn, of course, culminated in her SAT and teacher-assessment scores at age 11, and informed her progression to secondary education.

Social and academic outcomes were thus interrelated and, in addition to its ostensible role in supporting learning and monitoring outcomes, classroom assessment made a significant contribution to socializing Elizabeth into school life. As in the work of Torrance and Pryor (1998), we recorded this early socializing process in Elizabeth's career when, as well as being concerned with her academic progress, TAs (Teacher Assessments) and parental responses to assessment, focused on monitoring and supporting her adaptation to school expectations. While Elizabeth's intellectual and physical skills and progress across the curriculum were assessed as good, both formal and verbal reports to her parents were dominated by a range of negative assessments of her as noisy, quarrelsome, and disruptive with peers, especially boys. Such assessments led to friction, punishments, and warnings at home. As we have described above, in relation to Mrs Tucker, such socializing processes are linked to issues of control and the maintenance of a classroom environment in which effective teaching and learning can develop. Thus, the socializing and control functions of assessment in Elizabeth's case were related to her teachers' interests and

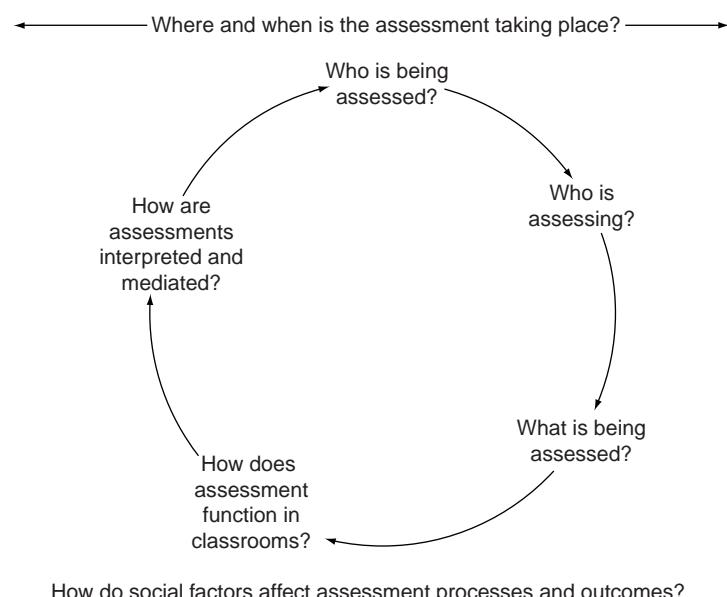


Figure 1 Social influences on assessment: A simple model. From Filer, A. and Pollard, A. (2000). *The Social World of Pupil Assessment*. London: Continuum.

to other children's learning as much as with Elizabeth's development as a pupil. However, assessment of Elizabeth's behavior and relationships went beyond straightforward conceptions of her as a pupil. The problem of her physical liveliness and association with boys, especially naughty boys, was a recurring theme in early TAs of Elizabeth, and a cause for further conflict and unhappiness at home. While accepting her daughter's identity as a girl – "that is Elizabeth, that's *her*" – her mother nevertheless strived to support teacher attempts to curb her daughter's boisterous association with boys, wishing, she admitted, that Elizabeth was more of a dainty child, and expressing the notion that her daughter, with all her enquiring energy was more like a boy. However, in the context of peer relationships, year-on-year sociometric questioning repeatedly revealed Elizabeth to be one of the most popular children in the class, for her playfulness, confidence, and boldness, for her artistic skills and willingness to help, academically. Further, she achieved this status on account of her appeal to boys, as well as girls. Thus, while continual attempts were made by her teachers, and on behalf of her teachers by her mother, to socialize Elizabeth into appropriate pupil behavior, and especially to socialize her as a female pupil, these efforts were in direct conflict with socializing process within the peer culture.

Thus, Elizabeth's case makes explicit some of the gendered norms and values that can remain implicit in assessments of pupils' behavior unless a pupil persistently contravenes them, as Elizabeth did. One of the functions of assessment in Elizabeth's life, therefore, was in providing a form of communication through which gender expectations were shared and communicated among her teachers, her parents, and her peers. While implicit norms relating to gender were made explicit here, other norms and values relating to culture and ethnicity of pupils similarly remain implicit until challenged. For example, Adams (1997), writing within the US context, presents the case study of a white adolescent girl, Sharon, who contravened gender and racial norms. Sharon's toughness and powerful identification with black gang culture gave rise to sustained criticism, in approaches to her mother and before her peers, as teachers tried to resocialize her into an appropriate pupil identity.

Reviewing again the question of who is being assessed, we can note that Elizabeth's resources and potential with regard to her physical and healthy attractiveness and liveliness and her linguistic, physical, and artistic skills, were highly valued within the peer group. However, many of her teachers felt ambivalence regarding her social identity. For instance, her year-2 teacher made overt and strenuous attempt to curb Elizabeth's deviant pupil behavior, while recognizing that those same qualities made her attractive to her peers, exciting, and funny. Indeed, she recognized that Elizabeth's liveliness, lack of conformity, and well-developed sense of humor made for

an extremely vital and attractive social identity, among adults, as well as children. However, for many of her teachers and her mother, they also stood in the way of an acceptable pupil identity and, in some respects, in the way of an appropriate identity for a pupil who was also a girl.

Figure 2 is an elaboration of the simplified model previously introduced. Some elements of it have been referred to in Elizabeth's story, but others would repay further study within the original sources.

Conclusion

The conceptual model which has been introduced is an attempt to represent important, recursive cycles which underpin the social consequences of schooling. In particular, it highlights the ways in which identity, teacher practices, peer and family cultures, and the interpretations and mediations of teachers, family, and peers feed into, reinforce, and condition each other. Importantly too, of course, we have suggested that the microprocesses of pupil and teacher identities, practices, and interpretations are embedded in macro-sociohistorical and political contexts which shape the policies of schools and the perceptions and expectations of teachers and families.

This type of model was initially developed through two related studies, *The Social World of Children's Learning* (Pollard and Filer, 1997) and *The Social World of Pupil Career* (Pollard and Filer, 1999) and the recursive cycles represent the analytic insights generated through longitudinal tracking of pupils' identity, learning, and school careers.

The significance of this approach to assessment is that power, process, and consequence are foregrounded. Detailed study of assessment practices reveal patterns of social influence which question the aspiration to objectivity. Research on classroom interaction, identity, and relationships suggest that assessment outcomes are tainted and should be, at least in part, seen as social products as well as products reflecting purer forms of capability or achievement. Holistic enquiry into the social mediation of assessment outcomes by significant others shows the enormous variability of consequence for pupil identities and self-perceptions as learners.

A social analysis of assessment practices and products thus generates concerns in respect of the categoric, summative certification of performance. Indeed, we could go further and argue that established assessment practices often yield patterns and systematic effects which risk being fundamentally divisive. As policymakers configure education systems to meet the demands of international competition, they may also unwittingly reinforce social divisions and widen the life-chance gaps which some groups of children face.

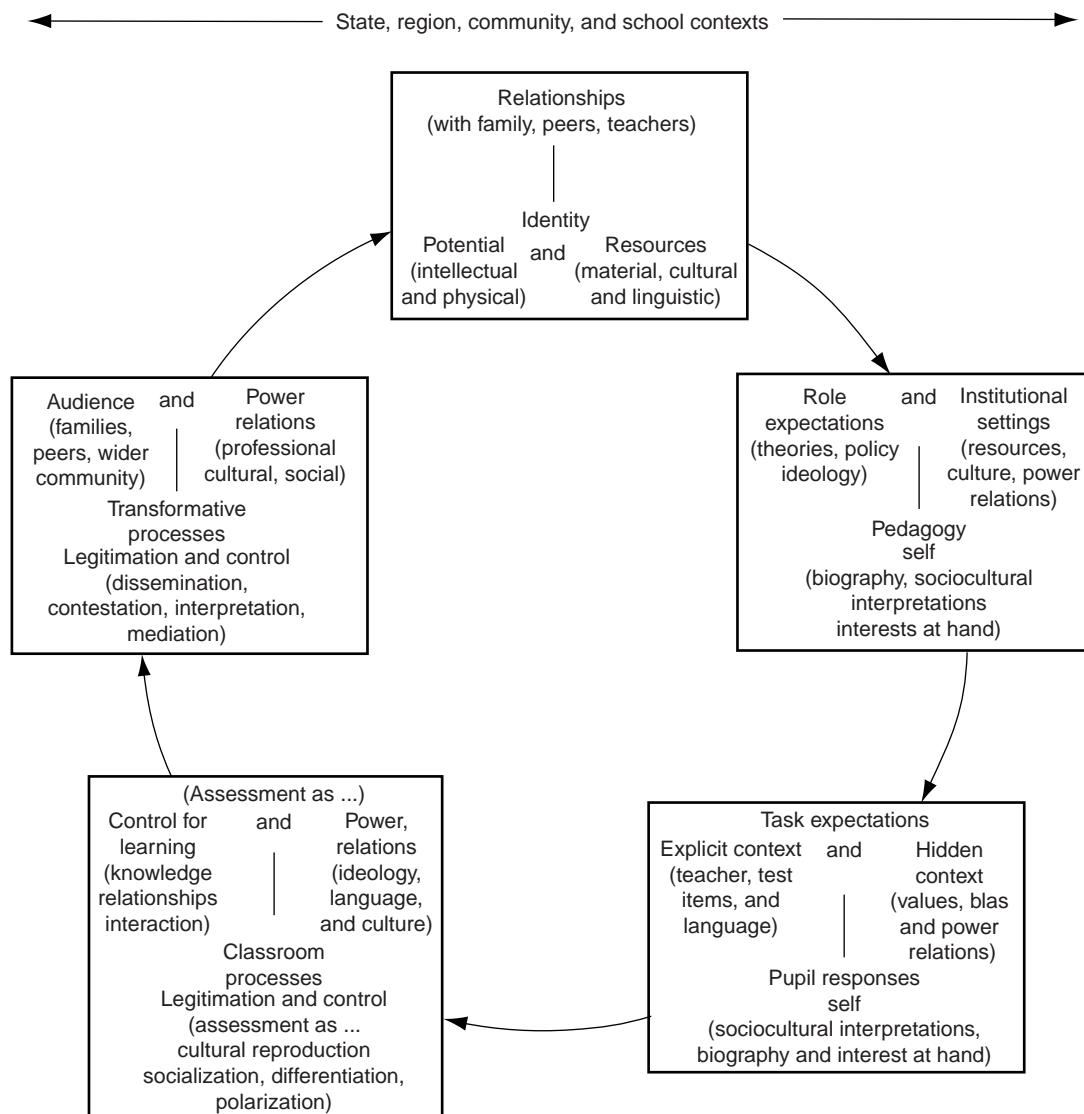


Figure 2 Social influences on assessment: A developed model. From Filer, A. and Pollard, A. (2000). *The Social World of Pupil Assessment*. London: Continuum.

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Self-Efficacy Beliefs

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Glossary

Outcome expectations – Beliefs about the expected outcomes of actions.

Reciprocal determinism – Interacting influences of cognitions, behaviors, and environmental variables.

Self-efficacy – Perceived capabilities to learn or perform behaviors at designated levels.

Social cognitive theory – The theory of behavior emphasizing cognitive, vicarious, self-regulatory, and self-reflective processes in human adaptation and change.

improve their students' emotional states, correct their faulty self-beliefs and habits of thinking (personal factors), improve their academic skills and self-regulatory practices (behaviors), and alter the school and classroom structures that may work to undermine student success (environmental factors).

Social cognitive theory is rooted in a view of human agency in which individuals are proactively engaged in their own development and can make things happen by their actions. Individuals are imbued with certain capabilities that define what it is to be human. Primary among these are the capabilities to symbolize, plan alternative strategies (forethought), learn through vicarious experience, self-regulate, and self-reflect. For Bandura, however, the capability that is most distinctly human is that of self-reflection; hence, it is a prominent feature of social cognitive theory. Through self-reflection, people make sense of their experiences, explore their own cognitions and self-beliefs, engage in self-evaluation, and alter their thinking and behavior accordingly.

Overview of Social Cognitive Theory

With the publication of *Social Foundations of Thought and Action: A Social Cognitive Theory* in 1986, Albert Bandura advanced a view of human functioning that accords a central role to cognitive, vicarious, self-regulatory, and self-reflective processes in human adaptation and change (Bandura, 1986). From this social cognitive perspective, human thought and action are viewed as products of a dynamic interplay among personal, behavioral, and environmental influences. How people interpret the results of their own behaviors informs and alters their environments and the personal factors they possess that, in turn, inform and alter subsequent behaviors. The view that (1) personal factors in the form of cognition, affect, and biological events; (2) behaviors; and (3) environmental influences create interactions that result in a triadic reciprocity is the foundation of Bandura's conception of reciprocal determinism.

The reciprocal nature of the determinants of human functioning in social cognitive theory makes it possible for therapeutic and counseling efforts to be directed at personal, environmental, or behavioral factors. Strategies for increasing well-being can be aimed at improving emotional, cognitive, or motivational processes; increasing behavioral competencies; or altering the social conditions under which people live and work. In school, for example, teachers face the challenge of improving the academic learning and confidence of their students. Using social cognitive theory as a framework, teachers can work to

Self-Efficacy Beliefs

Of all the thoughts that affect human functioning, and standing at the very core of social cognitive theory, are self-efficacy beliefs, or individuals' judgments of their capabilities to learn or perform courses of action at designated levels. In essence, self-efficacy beliefs are the self-perceptions that individuals hold about their capabilities. These beliefs of personal competence provide the foundation for human motivation, well-being, and personal accomplishment. This is because unless people believe that their actions can produce the outcomes they desire, they have little incentive to act or to persevere in the face of difficulties.

Self-efficacy should not be confused with constructs such as self-concept or self-esteem, which are broad evaluations of one's self, complete with judgments of self-worth that accompany such evaluations. Self-efficacy beliefs revolve around questions of can (Can I write this essay? Can I solve this problem?), whereas self-concept/self-esteem beliefs reflect questions of feel (Do I like myself? How do I feel about myself as a writer?). Moreover, one's beliefs about what one can do may bear little relation to how one feels about oneself. Many bright students are able to engage their academic tasks with

[†]Deceased.

strong self-efficacy even while their academic skills are a source of low self-esteem, having been labeled by their classmates as nerds or geeks.

Research examining the empirical properties of these two constructs has shown that they differ in important ways. Self-efficacy beliefs are cognitive, goal-referenced, relatively context-specific, and future-oriented judgments of competence that are relatively malleable due to their task dependence. Self-concept beliefs, on the other hand, are primarily affective, heavily normative, typically aggregated, hierarchically structured, and past-oriented self-perceptions that are relatively stable due to their sense of generality. Self-efficacy acts as an active precursor of self-concept development.

People's self-efficacy beliefs should not be confused with their judgments of the consequences that their behavior will produce, or outcome expectations. Typically, self-efficacy beliefs help determine the outcomes one expects. Confident individuals anticipate successful outcomes. Students confident in their academic skills expect high marks on examinations and expect the quality of their work to reap personal and professional benefits. Conversely, students who lack confidence in their academic skills envision a low grade before they begin an examination or enroll in a course. The expected results of these imagined performances will be differently envisioned: greater academic success and subsequent career options for the former and curtailed academic possibilities for the latter. However, self-efficacy beliefs also can be inconsistent with the outcomes one expects. A high sense of efficacy may not result in behavior consistent with that belief, for example, if the individual also believes that the outcome of engaging in that behavior will have undesired effects. A student highly self-efficacious in his/her academic capabilities may elect not to apply to a particular university whose entrance requirements are such as to discourage all but the hardest souls.

The notion of perceived control also differs from self-efficacy. People who believe they can control what they learn and perform are more apt to initiate and sustain behaviors directed toward those ends than are individuals who hold a low sense of control over their capabilities. Perceived control is generic; thus, it is meaningful to speak of this control over learning or performing and over outcomes. Further, it is only one aspect of self-efficacy. Other factors that influence self-efficacy include perceptions of ability, social comparisons, attributions, time available, and perceived importance. People may believe that they can control their use of learning strategies, effort, and persistence, yet hold a low sense of self-efficacy for learning because they feel that the learning is unimportant and not worth the investment of time.

Since individuals operate collectively as well as individually, self-efficacy is both a personal and a social construct. Collective systems develop a sense of collective

efficacy – a group's shared belief in its capability to attain goals and accomplish desired tasks. For example, schools develop collective beliefs about the capability of their students to learn, of their teachers to teach and otherwise enhance the lives of their students, and of their administrators and policymakers to create environments conducive to these tasks. Organizations with a strong sense of collective efficacy exercise empowering and vitalizing influences on their constituents.

Sources of Self-Efficacy Beliefs

Individuals form their self-efficacy beliefs by interpreting information primarily from four sources. The most influential source is the interpreted result of one's previous performances, or mastery experiences. The process of forming self-efficacy beliefs from mastery experiences is simple and intuitive: individuals engage in tasks and activities, interpret the results of their actions, use the interpretations to develop beliefs about their capability to engage in subsequent tasks or activities, and act in concert with the beliefs created. Outcomes interpreted as successful raise self-efficacy; those interpreted as failures lower it.

In addition to interpreting the results of their actions, people form their self-efficacy beliefs through the vicarious experiences of observing others perform tasks. This form of efficacy information is particularly powerful when people observe models who they believe possess similar capability as themselves. Observing the successes of such models contributes to the observers' beliefs about their own capabilities (If they can do it, so can I!). Conversely, watching models with perceived similar capabilities fail can undermine the observers' beliefs about their own capabilities to succeed. When people perceive the model's capabilities as highly divergent from their own, the influence of vicarious experiences is greatly minimized. It is noteworthy that people seek out models with qualities they admire and capabilities to which they aspire. Significant models in one's life can help instill self-beliefs that will influence the course and direction that life will take.

Individuals also create and develop self-efficacy beliefs as a result of the social persuasions they receive from others. These persuasions can involve exposure to the verbal judgments that others provide. Persuaders play an important part in the development of an individual's self-beliefs. However, social persuasions should not be confused with knee-jerk praise or empty inspirational homilies. Effective persuaders must cultivate people's beliefs in their capabilities while simultaneously ensuring that the envisioned success is attainable. Just as positive persuasions may work to encourage and empower self-efficacy beliefs, negative persuasions can work to defeat and weaken the same. It is usually easier to weaken self-efficacy beliefs

through negative appraisals than to strengthen such beliefs through positive encouragement.

Physiological and emotional states such as anxiety, stress, arousal, and mood states also provide information about efficacy beliefs. People can gauge their degree of confidence by the emotional state they experience as they contemplate an action. Strong emotional reactions to a task provide cues about the anticipated success or failure of the outcome. When they experience negative thoughts and fears about their capabilities, these affective reactions can lower self-efficacy perceptions and trigger additional stress and agitation that help ensure the inadequate performance they fear. One way to raise self-efficacy beliefs is to improve physical and emotional well-being and reduce negative emotional states. As individuals have the capability to alter their own thinking and feeling, enhanced self-efficacy beliefs can, in turn, powerfully influence the physiological states themselves.

The sources of self-efficacy information are not directly translated into judgments of competence. Individuals interpret the results of events, and these interpretations provide the information on which judgments are based. The types of information people attend to and use to make efficacy judgments, and the rules they employ for weighting and integrating them, form the basis for such interpretations. The selection, integration, interpretation, and recollection of information influence judgments of self-efficacy.

Effects of Self-Efficacy Beliefs

Self-efficacy beliefs enhance human accomplishment and well-being in countless ways. They influence the choices people make and the courses of action they pursue. Individuals tend to select tasks and activities in which they feel competent and confident and avoid those in which they do not. Unless people believe that their actions will have the desired consequences, they have little incentive to engage in them. How far will an interest in architecture take a student who feels hopeless in geometry? Irrespective of the factors that operate to influence behavior, they are rooted in the core belief that one has the capability to accomplish that behavior.

Self-efficacy beliefs also help determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will be in the face of adverse situations. People with a strong sense of personal competence approach difficult tasks as challenges to be mastered rather than as threats to be avoided. They set challenging goals and maintain strong commitment to them, heighten and sustain their efforts in the face of failure, and recover their sense of efficacy more quickly after setbacks. High self-efficacy helps create feelings of serenity in approaching difficult tasks and activities. Conversely, people with low

self-efficacy may believe that things are tougher than they really are, a belief that fosters anxiety, stress, depression, and a narrow vision of how best to solve a problem. As a consequence, self-efficacy beliefs can powerfully influence the level of accomplishment that one ultimately achieves. This function of self-beliefs also can create the type of self-fulfilling prophecy in which one accomplishes what one believes one can accomplish; that is, the perseverance associated with high self-efficacy is likely to lead to increased performance, which, in turn, raises one's sense of efficacy and spirit, whereas the giving in associated with low self-efficacy helps ensure the very failure that further lowers confidence and morale.

Of course, human functioning is influenced by many factors. The successes and failures that people experience as they engage in the myriad tasks that comprise their life naturally influence the many decisions they must make. In addition, the knowledge and skills they possess play an important role in what they choose to do. However, because past attainments, knowledge, and skills are always interpreted by the individual, it is the interpretations that form the foundation for the beliefs that are developed about subsequent capabilities. As a consequence, people's accomplishments are generally better predicted by their self-efficacy beliefs than by their previous attainments, knowledge, or skills.

Development of Self-Efficacy Beliefs

The first influences on an individual's self-efficacy take place within the family. Parents and caregivers provide their children with the first experiences that differentially influence self-efficacy beliefs. These home influences that help children interact effectively with the environment positively affect self-efficacy. When the home environment is rich in activities and materials that arouse the children's curiosity and offer challenges that can be met, children are motivated to work on the activities and learn new information and skills.

Parents who provide a warm, responsive, and supportive home environment, encourage exploration and stimulate curiosity, and provide play and learning materials, accelerate their children's intellectual development. Parents also are the key providers of self-efficacy information. Since mastery experience is the most powerful source of self-efficacy information, the parents who arrange for their children to experience varied mastery experiences develop more efficacious youngsters than do parents who arrange fewer opportunities. Such experiences occur in homes enriched with activities and in which children have the freedom to explore. With respect to vicarious experiences, parents who teach children diverse ways to cope with difficulties and model persistence and effort strengthen their children's self-efficacy. Family members are also

prime sources of persuasive information. Parents who encourage their children to try different activities and support and encourage their efforts help to develop children who feel more capable of meeting challenges.

As children grow, peers become increasingly important. Parents who steer their children toward efficacious peers provide further vicarious boosts in self-efficacy. Peers themselves influence children's self-efficacy in various ways. One means is through model similarity. Observing others, who are similar to the observers, succeed can raise the self-efficacy of the observers and motivate them to perform the task if they believe that they, too, will be successful. Conversely, observing others fail can lead students to believe that they lack the competence to succeed, and dissuade them from attempting the task.

Self-efficacy beliefs tend to decline as students advance through school. There are several reasons for this, including greater emphasis on competition, more norm-referenced grading, less teacher attention to individual student progress, and the stresses associated with school transitions. These and other school practices can weaken academic self-efficacy, especially among students who are less academically prepared to cope with increasingly challenging academic tasks. Lock-step sequences of instruction frustrate some students who fail to grasp skills and increasingly fall behind their peers. Ability groupings can lower self-efficacy among those relegated to lower groups. Classrooms that allow for much social comparison tend to lower the self-efficacy of students who find their performances inferior to those of their peers.

Periods of transition in schooling also bring other factors that affect self-efficacy into play. As elementary students remain with the same teacher and peers for most of the school day, children receive much attention, and individual progress is stressed. Typically, however, several elementary schools feed into the same middle school, and children begin to move from class to class for specific subjects. Thus, middle school students become exposed to peers whom they do not know. Evaluation becomes normative, and there is less teacher attention to individual progress. The widely expanded social reference group, coupled with the shift in evaluation standards, requires that students reassess their academic abilities. As a consequence, perceptions of academic competence typically begin to decline during middle school.

In self-efficacy research, it is not uncommon for children to report overconfidence about accomplishing difficult tasks. Even being provided with feedback indicating low performance may not decrease self-efficacy. The incongruence between children's self-efficacy and their actual performance may be due to various causes. Children often lack task familiarity and do not fully understand what is required to execute a task successfully. As they gain experience, their accuracy improves. Children may also be unduly swayed by certain task features and decide based on these that they can

or cannot perform the task while ignoring other features. In subtraction, for example, children may focus on how many numbers the problems contain and judge longer problems to be more difficult than those with fewer numbers, even when the longer ones are conceptually simpler. As their capability to focus on multiple features improves, so does their accuracy.

Children sometimes do not know what they are capable of accomplishing. In writing, for example, it is difficult for them to know how clearly they can express themselves or whether their writing skills are improving. A teacher's feedback – especially at the elementary level – is intended to encourage and stress what children do well. Children may believe they can write well when, in fact, their writing is below normal for their grade level. As they develop, children gain task experience and engage more often in peer social comparisons, which improve the accuracy of their self-assessments. The correspondence between self-efficacy and performance also can be increased by providing children with instruction and opportunities to practice self-evaluation and with instructional interventions that convey clear information about children's skills or progress.

Self-Efficacy, Motivation, and Academic Achievement

Bandura situated self-efficacy within a social cognitive theory of personal and collective agency that operates in concert with other sociocognitive factors in regulating human well-being and attainment. He also addressed the major facets of agency – the nature and structure of self-efficacy beliefs, their origins and effects, the processes through which such self-beliefs operate, and the modes by which they can be created and strengthened. Bandura has reviewed a vast body of research on each of these aspects of agency in diverse applications of the theory. Researchers have demonstrated that the self-efficacy beliefs of individuals powerfully influence their attainments in diverse fields.

A search for the term self-efficacy in most academic databases reveals that, at the start of 2007, nearly 4 000 articles have been written on this important psychological construct. In a Google Internet search, the term returned over 1 million webpages. Self-efficacy has generated research in areas as diverse as life-course development, education, business, athletics, medicine and health, media studies, social and political change, moral development, psychology, psychiatry, psychopathology, and international affairs. Self-efficacy has been especially prominent in studies of educational outcomes such as academic achievement, attributions of success and failure, goal setting, social comparisons, memory, problem solving, career development, and teaching and teacher education. Researchers have established that self-efficacy beliefs and behavior outcomes

are highly correlated and that self-efficacy is an excellent predictor of academic motivation and performance.

Researchers also have demonstrated that self-efficacy beliefs mediate the effect of skills, previous experience, mental ability, or other motivation constructs on subsequent achievement, which implies that they act as a filter between prior determinants and subsequent accomplishments. Meta-analyses have found that the average weighted correlation between self-efficacy and work-related performance was (G) $r = 0.38$, which transforms to an impressive 28% gain in task performance. In education, a meta-analysis of studies published between 1977 and 1988 revealed that efficacy beliefs were positively related to academic achievement. Self-efficacy beliefs were related to academic outcomes ($r_u = 0.38$) and accounted for approximately 14% of the variance. Correlations between self-efficacy and academic performances in investigations, in which self-efficacy is analyzed at the item- or task-specific level and corresponds to the criterial task, have ranged from 0.49 to 0.70; direct effects in path analytic studies have ranged from $\beta = 0.349$ to 0.545. Self-efficacy beliefs have also been found highly predictive of college students' selection of majors and career choices. Variables such as perceived control, outcome expectations, value, attributions, and self-concept are types of cues used by individuals to assess their efficacy beliefs.

In general, empirical evidence amply supports Bandura's contention that self-efficacy beliefs touch virtually every aspect of people's lives – whether they think productively, self-debilitatingly, pessimistically, or optimistically; how well they motivate themselves in the face of adversities; their vulnerability to stress and depression; and the life choices they make. Self-efficacy is also a critical determinant of how individuals regulate their own thinking and behavior. Particularly in psychology and education, self-efficacy has proven to be a more consistent predictor of behavioral outcomes than have other motivational variables.

Summary

Bandura's social cognitive theory of human functioning emphasizes the critical role of self-beliefs in human cognition, motivation, and behavior. Social cognitive theory gives prominence to a self-system that enables individuals to exercise a measure of control over their thoughts, feelings, and actions. In putting forth this view, Bandura reinvigorated the nearly abandoned focus on the self in the study of human processes that William James initiated nearly a century earlier. Social cognitive theory is an agentic and empowering psychological perspective in which individuals are proactive and self-regulating rather than reactive and controlled either by environmental or biological forces. Instead, the beliefs that people have about themselves are key elements in their

exercise of control and of personal, cultural, and social achievement. It is because of their beliefs about their own capabilities – their self-efficacy beliefs – that people are able to exercise the self-influence required to contribute to the types of persons they become and their achievements.

See also: Anxiety; Attribution Theory; Motivating Students in Classrooms; Peer Learning in the Classroom.

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Relevant Website

<http://des.emory.edu> – Self-Efficacy: A Community of Scholars.

Volitional Control of Learning

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Introduction

In studies of learning in educational settings, researchers find that students often have conflicting yet equally valued goals. For example, one student, during an introduction to life science, may want to fit in with their peers, pursue questions that interest them, and perform successfully. Even after having committed to a school task, some students find that obstacles and sidetracks lay between start and completion. Completion of tasks can be supported by conscious self-regulation; but students cannot consciously manage every roadblock, stray thought, or discomfort without dividing their attention. In addition to conscious regulation of cognition as they work, students often have implicit, habitual, or automatized processes in place to maintain their effort. Together, these different aspects of self-regulation are what allow for volitional functioning.

Educational researchers disagree about the utility of the concept of volition. Early theory in psychology equated volition with the idea of willpower and misleadingly considered volitional struggles as a sign of personal weakness. Some theorists question the need for volition as a research target because established concepts of efficacy and agency seem sufficient to explain the successes of effective learners (Zimmerman and Schunk, 2002).

Other theorists find explanations of purposive action incomplete without the concept of volition (Gollwitzer, 1999). Motivation leads to commitment but volition denotes follow-through. Volition, defined in modern theory as purposive striving, entails processes by which students implement goals during learning, sustain motivation, and strategically regulate cognition and affect (Corno, 1994). Through volitional control, students regulate emotion, sustain motivation, and manage their learning. Volition is a target for intervention when learners stop short of perseverance in the face of difficulty and distraction, avoid learning projects that require focus and persistence, or fail to develop effective academic work habits. A full explication of goal pursuits in education requires accounting for both motivation and volition.

Our task in this article is to move beyond debates about construct utility, and keep readers in touch with some basic evidence supporting the importance of volitional control in academic learning and performance. Research on volitional control of learning provides valuable insights into how students who want to learn (i.e., students who are already motivated to learn) manage the learning process.

This includes an understanding of self-referenced processes used to cope with distractions and persist in accomplishing goals. Researchers have studied volitional control at different levels:

- as a relatively stable, self-reported orientation or work style that distinguishes different types of students (see, e.g., Kanfer and Heggestad (1997) who study motivational traits; Higgins (1989) who studies self-guides; and Koole *et al.* (2005), who discuss a temperamental predisposition they call action orientation);
- as a recordable process or event influenced by context (e.g., Winne and Jaimeson-Noel, 2003; Xu and Corno, 1998) and
- as an implementation mindset or state that can be induced experimentally by asking students to state exactly where and when they will do assigned work (Oettingen *et al.*, 2004).

A relatively recent body of research, conducted cross-nationally over the past three decades, has become the basis for successful intervention programs, and resulted in useful guidelines for parents and teachers hoping to build good academic work habits in children.

This article is divided into two substantive sections. First, we illustrate how researchers have studied the psychological construct of volitional control in education at different grade levels, highlighting methodologically valid and reliable procedures for capturing the construct. We describe key relationships between aspects of volitional control and educational accomplishments. In the next section, we provide brief descriptions of educational interventions designed to improve learners' volitional control. These interventions have produced positive outcomes at primary, secondary, and postsecondary levels of education.

Understanding Volitional Control in Education

Emotion control, effort management, and good academic work habits are manifestations of volitional control that contribute to successful performance in educational settings (Boekaerts and Corno, 2005). Evidence from different disciplinary and theoretical frames indicates that even young students can strategically manage their own learning. Recent research focuses on emotional regulation as a key aspect of volitional control, and demonstrates its value to

emotional wellbeing. Emotions can also serve as support functions in learning (e.g., they can signal the need to alter a course of action) but they must be channeled productively (Turner and Schallert, 2001).

Effortful Control

The social psychologist, Walter Mischel devised the classic protocol for studying impulse control in young children (see Mischel and Mischel, 1983). In a series of experiments, children as young as 4 had to resist the temptation to touch a desirable object while they sat alone in a room awaiting the return of a researcher. If they successfully avoided touching the object for a specified period of time, the object would be theirs. Observations of the children as they waited showed that those who delayed gratification sang songs and talked to themselves, looked at something else in the room, or played finger games to refocus their attention and help to fill the time. The authors' interpretation was that these children focused their mental energy and controlled their impulses and behavior in order to reach a goal. They were motivated by the goal, but they called forth volitional resources to accomplish it.

The relevance of this research to education was demonstrated some years later when Mischel and his colleagues reestablished contact with families of many of these same children (Shoda *et al.*, 1990). Using correlational procedures to relate early delay time with meaningful outcomes of education, the authors found that students who had been able to delay gratification and self-regulate at age 4 had significantly higher academic achievement and positive parental assessments of adjustment than students who had demonstrated weaker impulse control as children. Although correlation does not imply causation and the sample size was small, this was the first study to make such a longitudinal connection. Mischel and his colleagues established the value of focused attention in children's impulse control. Their analyses stressed the underlying importance of self-instruction and self-motivation strategies used by children as mediators for goal accomplishment, and provided a link between these variables and educational growth.

Mischel's protocols have been used subsequently in other examinations of delay in children (e.g., Kochanska *et al.*, 2000, 2001; Li-Grining, 2007). Strategies associated with delaying gratification are now considered part of a class of self-regulatory mechanisms broadly referred to as effortful control (Rothbart and Ahadi, 1994). Eisenberg *et al.* (2005) have extended research on impulse and effortful control in children.

These authors studied the development of effortful control throughout infancy and childhood in a controlled setting with a large sample size over more than 20 years. They found that individual differences in effortful control

are established in the first years of life, and that environment and parental support is crucial to the development of self-regulation skills (Zhou *et al.*, 2007). This combination of work from the subdisciplines of social and developmental psychology underscores the need for researchers and educators to consider both dispositional and situational factors in addressing students' self-regulation and effortful control.

Developmental researchers who have focused on the examination of effortful control have frequently conducted their research in controlled laboratory settings or through examining parent-child dyads. Students use volitional strategies to support their effortful control in a variety of complex situations: when learning material is not very interesting but students desire to do well; when others in the classroom are distracting; when the relationship between outcome and performance seems unclear; or when there is a need to prioritize a work goal relative to a competing social goal (Corno, 2004). Volitional resources include, but are not limited to, strategic self-instruction to tone down negative affect (Kuhl, 2000), vigilance or self-monitoring (Posner and Rothbart, 1992), structuring and organizing the environment to maximize focus and minimize intrusion (Xu and Corno, 1994), and seeking aid from peers and teachers to bolster persistence (Newman, 1994).

Emotional Regulation

Distractions and roadblocks to learning not only occur externally, but also internally. To be successful at self-regulation, students need to manage their emotional states, as well as their cognitive and motivational environments when they complete academic tasks. Although students experience a wide range of emotions in educational contexts, performance anxiety is a particularly prominent internal obstacle (Stober and Pekrun, 2004). Academic work provokes anxiety in many students; this has been demonstrated through physiological measures (Spangler *et al.*, 2002), surveys (Pekrun *et al.*, 2004), experimental manipulations (Meinhardt and Pekrun, 2003), case studies (Pekrun *et al.*, 2002), and analyses involving multidimensional scaling (Schutze *et al.*, 2002). Students' ability to control anxiety, keeping it at an optimal level, is critical if they are to accomplish their academic goals. This aspect of volitional functioning is supported by affect-regulation strategies.

Affect may be regulated deliberately or automatically as a function of temperament or predisposition (Koole and Jostmann, 2004). Deliberate regulation strategies include slowing one's breathing, reappraising the importance of the task, reminding oneself of personal agency (Schutze *et al.*, 2004), and clearly framing a task completion goal (Boekaerts, 2002). Individuals' temperament or predisposition determines the degree to which they instinctively regulate surprising or unpleasant stimuli by approaching or avoiding (Langens and Morth, 2003).

To be successful at managing emotions, students who are predisposed toward worry and emotionality will benefit from emotional scaffolding. Teachers can provide support and help anxious students to manage appropriate emotional responses to educational challenges. For example, Rosiek (2003) documented how teachers could profitably engage students' curiosity, interest, and even anger as a way of helping them connect to important content. When teachers engage students' emotions, however, it is critical that they provide the support to channel the emotion toward engagement; scaffolding is about engaging some emotion but not too much.

Managing the Tasks of Learning

Managing the tasks of learning similarly requires both deliberate and automatic sources of regulation. Some aspects of school learning tasks are controlled by teachers and curriculum design – sequencing, for example, and pacing. However, students must manage other aspects of tasks deliberately – setting completion goals, budgeting time, and seeking feedback. At a more habitual level, effective task management by students includes localized self-monitoring and selectively attending to pertinent details – error checking, self-instructing, and avoiding distraction.

An example of automatic or intuitive regulation that benefits a task is provided in a study by Snow and Lohman (1984). These authors examined component processes used by test takers when completing standardized tests. From a variety of indicators, they demonstrated that automatically applied organization and control processes were a critical aspect of self-regulation for scholastic achievement. In addition, this research showed that automaticity came about through exercise and appeared to be transferable to situations with similar affordances and constraints (Stanford Aptitude Seminar, 2002).

Implicit control processes, which students are often unaware of, can be made explicit if they are reframed as strategies for attacking tasks or problems. Corno and Kanfer (1993) asked high school and college students to think deeply about and explain how they manage different forms of academic work (homework, problem-solving tasks, and facing difficulty – situations that require effortful processing). Covert strategies (internal to the student) included meta-cognitive control (e.g., make a plan to follow and jump in), emotional control, (e.g., imagine being good at this and how that feels), and motivation control (e.g., give myself instructions about timelines). Overt strategies included control the task situation (e.g., move away from distractions) and control others in the task setting (e.g., tell the teacher if he/she is not being clear; see also McCann and Turner (2004) who developed an academic volitional strategies inventory).

Conscientious students with a good repertoire of both covert and overt strategies will use them adaptively, as appropriate for different tasks and circumstances. As strategy use can require effort, however, consistent conscious strategy use is a challenge for many students, even when they receive direct strategy instruction (Butler and Cartier, 2004; Dewitte and Lens, 1999; Pressley *et al.*, 1990).

Academic Work Habits

Recently, researchers have combined measures of volition obtained from different sources of data as a means to increase reliability and predictive validity. For example, Duckworth and Seligman (2005) defined self-discipline as an indicator of good work habits in high school students. To operationalize the construct, they obtained two independent samples of students from the same magnet school, and combined subjective ratings by students of how they worked (self-reports), objective observations from teachers and parents who rated students on the same qualities, and a performance-based measure (a delay-of-gratification task) modeled after Mischel and Mischel (1983) but designed for older students.

Regression analyses conducted using final grade point average (GPA) as an outcome measure controlled for two related variables: general ability (the Otis–Lennon School Ability Test) and prior GPA. Results showed that the self-discipline composite accounted for over twice the variance attributable to the general ability measure, and 16–20% of the variance beyond that accounted for by prior GPA. Further study showed that the highly self-disciplined adolescents outperformed their peers on achievement tests, high school attendance, and even admission to a selective high school (p. 939).

Although studies such as this give evidence to support the value of good work habits, less well studied are questions about how good work habits develop, and how ineffective habits can be changed (Corno, 2007). As noted above, some research has shown that students' automatic responses to learning tasks can be brought under greater conscious control through training (Bryan and Burstein, 2004; Maes and Karoly, 2005). Other research has suggested that students with poor work habits need more support in their homes and schools; for example, poor work habits are more common in students who attend impoverished schools (Battistich *et al.*, 1995).

Socio-demographic challenges affect the development of children's cognitive organization and control processes but appear unrelated to indicators of impulsivity, which can be temperamental (Li-Grining, 2007). These findings imply that explicit instruction and scaffolding in self-regulation may be especially important for temperamentally impulsive children who come from high-stress backgrounds. One hypothesis is that these children may have fewer effective

models of volitional functioning in their home environments (i.e., an access problem); alternatively, the stress these children experience may interfere with their ability to engage the cognitive resources needed to attend sufficiently to the volitional models they observe (Perry, 1998). Both hypotheses could also be correct; their delays could be compounded; in any case, explanations such as these deserve close investigation.

Selected Intervention Programs in Self-Regulation

Over the past 20 years, educational psychologists have developed a number of intervention programs designed to help students become more effective and efficient learners (Kauffman, 2004). Many of these programs have been studied empirically, but only a subset focused on helping students to function volitionally. Each program that we subsequently discuss included an evaluation component, and targeted at least one aspect of volitional functioning described above.

Elementary School Settings

Harris *et al.* (2005) developed a self-monitoring intervention to support on-task behavior in students diagnosed with attention-deficit/hyperactivity disorder. Students were instructed on two systems: one to help them self-monitor attention and one to self-monitor performance. To monitor attention, students were instructed to note their attention (checking “yes” or “no” on a chart provided for them) after hearing a tone played at the end of a random interval from 10 to 90 s in length. At the end of each study period, the child would mark on a graph the number of times they answered “yes.” To self-monitor performance, the students were asked to graph the number of times they practiced their weekly spelling words. Both interventions showed statistically significant improvements to students’ on-task and spelling study behavior. Aids and instructional support for self-monitoring exercises such as those used by Harris and her colleagues can also be found in Zimmerman *et al.* (1996).

Elementary school teachers have been the focus of other interventions designed to teach or develop self-regulation in students. Perry *et al.* (2004) developed a mentoring program to support preservice elementary school teachers integrating self-regulation strategies into their curriculum. The teachers in their study addressed all phases of self-regulated learning in their lesson plans, that is, planning, implementation, and reflection. An extensive evaluation across five cohort groups found that the teachers who designed complex tasks (e.g., multiple goals, extended activities over time, a variety of processes, and alternative ways for children to demonstrate competence)

provided significantly more opportunities for students to engage in and successfully develop self-regulated learning skills. For example, students were more likely to have choices, control over challenge, opportunities to evaluate their learning, and collaborate with peers.

Middle School Settings

The strains of adolescence put middle school students in the United States (ages 12–14) at an important period in their academic development; the expectations that students’ set at this point in their lives carry over into their future academic and career choices (Tai *et al.*, 2006). Oyserman *et al.* (2002) developed the Pathways for Youth project, a 9-week, after-school program for urban middle school students. The program was designed to support students’ self-regulation and academic performance. Adult guides worked with students to complete seven steps:

1. envisioning possible futures for themselves,
2. conceptualizing those futures as goals,
3. constructing a path for goal obtainment,
4. making explicit connections between present educational activities and the valued future goals,
5. discussing possible roadblocks and forks in the path,
6. brainstorming strategies for managing imagined future obstacles, and
7. interviewing successful adults from the community about their own strategies for reaching goals.

This process supported students through the full self-regulatory cycle from goal setting or motivation to volition (see Corno, 1995). A controlled intervention showed that relative to students in a comparable group, students who participated in the program “... reported more bonding to school, concern about doing well in school, ‘balanced’ possible selves, plausible strategies to attain these possible selves, better school attendance, and for boys, less trouble at school” (Oyserman *et al.*, 2002: 313).

Randi (2004) provided opportunities for preservice teachers to generate ways to develop students’ volition as they transitioned from college student to teacher in their teacher-education program. Most of Randi’s teachers were planning to teach in grades 5–8. Their 13-week course focused on motivation and volition theory and classroom applications of self-regulated learning. Working in small groups, students read the research literature, analyzed teaching cases, and wrote about self-regulation strategies they themselves used to follow through on their commitments to become teachers. Teachers also wrote weekly journal entries reflecting on strategies for self-regulation they would use in their own classrooms, and designed curriculum activities and lessons for their students. The coursework led to many examples of units, incorporating self-regulated learning that these teachers could then take into their own middle school classrooms.

Secondary School Settings

The Interactive Learning Group System (ILGS) innovation program (Boekaerts, 1997; Boekaerts and Minnaert, 2003) is an example of a school-wide self-regulation intervention. The project targeted vocational secondary schools in the Netherlands by providing students with ill-structured problems in a highly structured environment. Instructors were trained in self-regulation-based instructional principles. Examples of these principles were “prepare group assignments at home and write them on the blackboard as soon as you enter the classroom... so that teachers come to class with an explicit plan and that students are aware of the amount of work to be done”; and “prepare the students for group assignments by providing prior knowledge.” The teacher “modeled the learning processes, making them more transparent to students” (Rozendaal *et al.*, 2005: 144). Another aspect of this program required students to work in interactive, heterogeneous groups on ill-structured problems. Although the intervention was not fully implemented by teachers as planned, the program found some success in providing teachers with insights into students’ self-regulation and changing psychological needs.

Randi (Randi and Corno, 2000) developed and tested a program for teaching high school humanities students about self-regulated learning using a literary quest theme. Students gained an intellectual understanding of the concept by reading about self-regulating characters in the quest literature, and then applied their knowledge by writing about such strategies in their own lives. Students exposed to this curriculum were able to explain the strategies of self-regulation through their writing, and accurately discussed the utility of volitional control in their own lives.

Undergraduate Settings

Several undergraduate programs to support students’ study habits and strategic learning have appeared over the past 25 years. Most programs provide instruction in cognitive learning strategies, and also help students achieve the goals they set for themselves in their pursuit of higher education. In a 5-year, longitudinal study at the University of Texas, Austin, Weinstein *et al.* (1998, 2000) evaluated a learning and study strategies course. This three-credit, nonmajor, educational psychology course was not only designed to focus on cognitive learning strategies, but also provided students with instruction on explicitly using affect and volitional strategies. The evaluation found that 71% of students who successfully completed the course in study strategies had graduated after 5 years, compared to 55% for the general university population, despite the former having entered with lower Scholastic Aptitude Test (SAT) scores. The effectiveness of acquiring volitional strategies could not be separated from the learning of other strategies in this evaluation, however.

Conclusion and Recommendations for Future Research

Volition, defined as purposeful striving, is a useful and necessary concept that complements motivation. Most research on volitional control in academic settings is based on students’ reports of their thinking and behavior that are quantified on ordinal scales and used to predict performance (McCann and Garcia, 1999; Pintrich and Garcia, 1991). However, some investigators have obtained observation data, used interviews, conducted case studies, and designed experimental tasks in order to elicit evidence of volitional control (see Corno, 2000).

Key components of volition include effortful control and emotional regulation. Effortful control of impulses first appears in toddlers, and is associated with positive social, emotional, and academic outcomes later in life. For students who have difficulty with emotional regulation, learning to use particular strategies can be productively channeled, particularly if they are constrained by predispositions such as stress or performance anxiety. Education practitioners can support students’ emotional regulation through instruction in volitional strategies and emotional scaffolding.

Managing learning tasks similarly calls upon both implicit and explicit processes of volition. Explicit processes include organization and control strategies that can be fostered through instruction and modeling. Implicit processes, such as avoiding distraction through focused attention to pertinent details in tasks, are less easily learned through instruction. Both types of processes underlie good work habits, however. Good academic work habits, those products of volitional functioning that come about from repetition of volitional strategies within supportive environments, are important to success in school. Teachers reinforce good work habits all along the age range, even into and through higher education (Corno, 2007).

Intervention programs for adolescents have been more prevalent than those for children and toddlers. Existing intervention programs focus primarily on supporting explicit self-regulation, study strategy use, and motivation through goal setting. A few programs support students’ affective regulation through collaborative learning and mentorship. Perhaps the best examples of programs that support students through all phases of self-regulation are those conducted by Oyserman, and colleagues.

This article is not the avenue for an elaborate agenda on future research on volitional control of learning. However, we can say from our review that there are few direct hypotheses about the aspects of volitional control that are most likely to promote academic success in students. Researchers have not assessed the added value of volitional strategies over and above the learning of cognitive skills. In addition, we argue that little is known about the optimal conditions for volitional control. Although

educational researchers know something about how to develop volitional capabilities in students, there is no evidence about why students from high-stress environments demonstrate volitional delays. We need to know which techniques for teaching volitional control transfer across contexts, and what obstacles may interfere with the adaptive use of volitional strategies in students who have learned them. As discussed previously, questions remain about how good work habits develop, and how ineffective habits can be changed. Finally, we argue that there is a need for more experiments designed to manipulate the covert and overt aspects of volitional control used by students in a variety of educational settings, classrooms, homework completed outside of school, and studying in online environments.

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Motivation Regulation

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Introduction

Students' motivation within academic tasks is consistently viewed as a critical determinant of their learning and achievement. Students who report increased levels or more adaptive forms of motivation tend to exhibit greater learning and higher levels of achievement. Unfortunately, academic tasks are replete with obstacles that make it difficult for students to be motivated. Students complete cognitively challenging academic tasks, learn material that has little personal relevance, and repeatedly practice basic decontextualized skills. Further, the classroom environment within which these activities are situated is often characterized by multiple tasks occurring at one time, a high level of noise and distractions, and many opportunities for off-task behavior. Hence, even students who begin academic tasks eager to work and be successful may suffer declines in motivation. Motivational demands for completing academic work outside the classroom can be even more burdensome. Students may have to complete homework perceived as difficult, unimportant, or boring, and do so without the guidance or social supports available in the classroom. Despite these problems, many students do exhibit high levels of motivation for academic tasks both in school and outside the classroom context.

Motivational regulation is one explanation for how students' are able to rise above these obstacles and sustain or increase their own motivation for learning. The purpose of this article is to review the conceptual understanding of motivational regulation and to explain its importance to students' academic functioning. To achieve this goal, the article is divided into five sections. In the opening section, we provide a basic conceptual definition of motivational regulation and distinguish it from the process of motivation. In the following section, we identify the theoretical roots of motivational regulation within models of volition and self-regulated learning. Next, we discuss three major dimensions of motivational regulation. Finally, we touch on research examining the antecedents and the outcomes associated with students' motivational regulation.

General Definition and Distinction from Motivation

At the broadest level, the term motivational regulation could be used to describe any efforts to manage students'

achievement motivation. From this perspective, teachers and parents engage in motivational regulation on a regular, if not daily, basis when they purposefully design interesting tasks, promise rewards for hard work, or make statements to bolster students' self-confidence. This more expansive viewpoint, however, is typically supplanted by one that focuses on regulatory efforts that are initiated and directed by students themselves. In line with this focus, the emphasis here is on motivational regulation that is purposeful and is initiated and directed by the student. We define motivational regulation or the regulation of motivation generally as the process through which individuals purposefully manage either their level of motivation or the underlying processes through which motivation is determined. Motivational regulation, therefore, includes thoughts and behaviors through which students act to initiate, maintain, or supplement their willingness to start or to provide effort toward completing academic activities (Wolters, 2003).

Motivational regulation is closely related, but conceptually distinct from motivation itself. Achievement motivation most often refers to students' willingness or desire to engage in, persist, or work hard at academic tasks or to account for goal-directed behavior. Motivation also encompasses the cognitive or affective processes through which this willingness is determined (Anderman and Wolters, 2006). Behaviorally, theories of achievement motivation seek to explain students' choice of activities, the intensity or quality of their effort, and their persistence at academic activities. Most contemporary models explain these outcomes using cognitive constructs such as students' causal attributions, perceptions of self-competence, goals, values, interests, feelings of self-determination, or reasons for engaging in an activity.

Motivation and the regulation of motivation differ most acutely with regard to the awareness and purposefulness of students' thoughts and actions. Regulation of motivation describes the thoughts and actions through which students consciously and intentionally manage their motivation regarding a particular activity (Boekaerts, 1996; Wolters, 2003). This process has a deliberateness or plan-fullness that is unnecessary and absent in most explanations of motivation. Cognitive theories of motivation do not typically propose that students must ever be aware of the underlying processes that determine their motivation. In addition, models of motivation do not advocate that students ever purposefully intervene in these processes.

As an example, students in a class may experience a heightened level of personal interest based on the topic of a particular lesson. This increased interest may, in turn, foster greater attention and persistence for tasks associated with that lesson. Students may not and need not be cognizant of their increased interest for it to affect their behavior. In contrast, motivational regulation would postulate that students understand the positive effects of increased interest and intentionally take steps that will facilitate the interestingness of the lesson. Boekaerts (1992) described this distinction as subjective versus active control. The former refers to actions influenced through motivational beliefs and perceptions, and latter refers to actions determined more by a conscious intent to manipulate.

Theoretical Roots of Motivational Regulation

Research on motivational regulation has emerged from a number of different theoretical traditions. Parts of this process have been investigated by researchers interested in volition, personality, language development, delay of gratification, cognitive and emotional development, behavioral conditioning, and self-regulated learning. These diverse and extensive theoretical roots speak of the importance of motivational regulation as a fundamental aspect of effective functioning in both academic and nonacademic settings. Space limitations prohibit a full and comprehensive consideration of the contributions from each of these perspectives to the overall understanding of motivational regulation. We focus our discussion on volition and self-regulated learning, the two theoretical frameworks most frequently used to understand this process within academic settings.

Motivational regulation is a prominent feature within the research and theory of examining volition. Historically, theories of volition focus on understanding how people are able to maintain the pursuit of goals they have selected in light of competing opportunities and behavioral obstacles (e.g., Corno, 2001; Kuhl, 1985). Corno (2004; Corno and Kanfer, 1993) has served as a primary ambassador for using a volitional framework to understand students' learning and achievement behaviors in academic settings. As a whole, this work emphasizes a distinction between motivational and volitional processes. Motivational processing is viewed as responsible for identifying which goals or behavioral outcomes students decide to pursue. Volition, in contrast, is viewed as critical for protecting those intentions once they have been formed. For example, motivation would account for a student's decision to sit and begin a homework problem set. Volition would account for the student's efforts to remain engaged in this activity until it was finished despite distractions in the environment and/or difficulty with the task. Within this perspective, the switch from

forming intentions to protecting those intentions is considered an important qualitative change that is difficult to undo.

According to volitional theories, students maintain their intention to pursue goals they have selected through various regulatory or control strategies. Based on which aspect of the learning process is being controlled, these strategies have been divided into strategies associated with motivation, as well as attention, encoding, cognition, emotion, and environmental distractions (Corno, 2001). A student who has adopted a goal of preparing for an upcoming exam might go to a quiet place to study (environmental control), use flashcards to memorize course material (encoding control), and reduce anxiety through self-talk (emotion control). Most relevant to the current discussion, students' control of motivation has been described as one type of volitional strategy central to students' efforts to increase their persistence or time on task (Corno, 2004; Kuhl, 1985).

Models of self-regulation emphasize individuals' active, purposeful, and reflective role in their own functioning and behavior within domains that include employment, clinical well-being, chronic illness, and general physical health. The term self-regulated learning is most often applied within social cognitive models that articulate how this process operates in academic contexts. In these contexts, self-regulated learners are viewed as autonomous and efficient learners who have the cognitive abilities as well as the motivational beliefs and attitudes needed to understand and direct their own achievement-related behaviors (Boekaerts, 1996; Pintrich, 2004; Zimmerman, 2000). In particular, these students are knowledgeable about many different cognitive learning strategies and have the metacognitive skills needed to select, monitor, and control their use of these strategies effectively. They also have motivational beliefs and attitudes that drive their engagement and persistence in academic tasks.

Regulation of motivation has become a key feature within several social cognitive models of self-regulated learning (Boekaerts and Cascallar, 2006; Pintrich, 2004; Wolters, 2003). For instance, Pintrich (2004) argued that self-regulated learning entails students' ability to have forethought, monitor, control, and reflect on four areas of academic functioning one of which was motivation. Models advanced by Zimmerman (2000) and Boekaerts (1996) also depict students' understanding and active management of their own motivational processing as an important part of self-regulated learning. Within each of these major models of self-regulated learning, motivation or motivational processing can be the target of students' efforts to plan, monitor, control, and reflect. These efforts, furthermore, are thought to pay dividends to students in terms of increased attention, effort, and persistence that ultimately lead to improved learning and higher achievement.

Dimensions of Motivational Regulation

Drawing from across theoretical perspectives, there appears to be at least three distinguishable dimensions to motivational regulation. One facet reflects the meta-level knowledge or understanding needed to regulate motivation (Boekaerts, 1996; Wolters, 2003). In the research on metacognition, this type of knowledge has been differentiated based on whether it relates to the person, the task, or strategies (Pintrich *et al.*, 2000). Students' knowledge of what topics, domains, or activities they personally find interesting, fun, or motivating in general would reflect person-related meta-motivational knowledge. Insight into the types of tasks that are more or less motivating in general or that may make it difficult to be motivated because they are boring, frustrating, or lack usefulness would be task-related meta-motivational knowledge. Consistent with views of metacognition, meta-level knowledge related to motivational regulation strategies is likely to include declarative, procedural, and conditional forms of knowledge. Some students, for example, have been found to use self-talk to highlight features of completing the task that they find motivating (Wolters, 1998). Before engaging in this sort of strategy, however, students must know about it as a potential strategy, must know how to enact the steps needed to accomplish it properly, and must believe that using the strategy will lead to some desired effect on motivation within a particular situation. Students lacking any of this knowledge are unlikely to use this particular motivational regulation strategy.

A second dimension of effective motivational regulation is the monitoring of one's level or state of motivation. Students can become aware or self-assess their motivation before a task begins (prediction of motivation), during a task (experience of motivation), and after a task has been completed (reflection on motivation). This consideration of one's level of motivation is necessary to identify when motivation is waning, and is thus a prerequisite to any active intervention designed to bolster one's motivation. As an example, a person is unlikely to take steps that will make a task more enjoyable if he/she does not first become aware that he/she is bored and losing interest in finishing the task. This type of self-awareness may include monitoring both the level of motivation as well as the nature of one's motivation. The former ensures that the willingness or quantity of effort needed to complete a task is available whereas the latter may be necessary to ensure that the type of motivation driving one's engagement will lead to the desired outcomes. Much like the monitoring of one's comprehension or understanding outlined as part of metacognition, this process may continue without much conscious effort until a problem is encountered. Nonetheless, without effective monitoring, students may not successfully regulate their motivation for academic tasks.

A third dimension of effective motivational regulation is the purposeful or active efforts to intervene and control one's own motivation for a task. This process encompasses the actual strategies one engages in, to control the level or nature of motivation. For instance, once a student recognizes that she has little interest in tackling a required task she must do something to increase her interest, or to foster some other form of motivation. Given the diverse nature of motivation, the particular methods that might be used to affect motivation for a task are likely to be quite varied. Prior work examining motivational regulation, in fact, has identified a number of strategies that students might use to control their motivation (Wolters, 2003). These strategies include attempts to regulate various motivational beliefs that have been discussed in the achievement motivation literature such as goal orientation, self-efficacy, task value, and interest in the task. When initiated in order to control outcomes such as effort and persistence, students' management of their affect, environment, and behavior might also be considered forms of motivational regulation (Boekaerts, 1996; Wolters, 2003).

Antecedents of Motivational Regulation

The consideration of factors that determine or influence whether students engage in motivational regulation is important for both its theoretical and practical implications. Consistent with views about self-regulation and volition more generally (Boekaerts and Corno, 2005; Pintrich, 2004), motivational regulation is likely a function of both stable individual differences among students, as well as more situational influences within the instructional context and the broader environmental context. Recent work in this area also argues that all aspects of self-regulation, including motivational regulation, are developed through social and cultural interactions/influences. In this section, we briefly identify factors from within each of these areas that have been discussed as potential influences on students' motivational regulation.

Individual differences among students, including aspects of their cognitive development, personality, gender, and ethnic identity may affect the extent to which they regulate their motivation. Developmentally, research suggests that forms of motivational regulation may emerge at a very young age. Children as young as 3 years old use strategies to creatively modify academic tasks to regulate their motivation, and even before reaching school age there is evidence that children use strategies to block distractions in order to complete tasks (Corno, 1994; Metcalfe and Mischel, 1999). Still, as suggested by the extant research on metacognition and self-regulated learning, the most sophisticated forms of motivational regulation may not

develop until adolescence. Moreover, students who are more conscientious or who identify more closely with doing well in school may be more apt to regulate their motivation for academic tasks.

Another determinant of students' efforts to regulate their motivation is likely the motivational beliefs and attitudes they bring to a particular situation or task. Past work on the more cognitive aspects of self-regulated learning has firmly established that motivation impacts students' use of metacognitive regulatory strategies. As motivational regulation represents a similar expression of self-management, it follows that students who hold more adaptive motivational beliefs would be more apt to utilize motivational-regulation strategies than students who hold less-adaptive motivational beliefs (Boekaerts, 1996; Corno, 1994). The view that motivation can be both a cause and an outcome of students' regulatory processing is consistent with the view of self-regulated learning as a complex, iterative process. Further, prior research provides some evidence supporting this additional link between motivation and motivational regulation. Wolters and Rosenthal (2000), for instance, found that students who viewed the material they were learning as more important or useful, or who focused on mastery goals tended to report greater use of motivational regulation strategies. In this same study, however, self-efficacy was not an important predictor of students' motivational regulation. Hence, a more complete understanding of these relations remains an important goal for future research.

Situational factors, including the instructional environment specifically, represent another possibly potent influence on students' motivational regulation. For instance, teachers can structure their classrooms to encourage motivational-regulation strategies by allowing students time to reflect, the autonomy needed to control aspects of the task, and by providing opportunities for students to observe models of this process. In addition, parents can foster the different facets of motivational regulation through modeling and by providing opportunities for self-management, and through other parenting practices. Students can be trained to use strategies for motivational regulation, like other forms of volition and self-regulation, through more direct interventions.

Broader sociocultural processes can also be viewed as an important influence on the development of motivational regulation. For instance, Jarvela and Volet (2004) describe motivation as a dual psychological–social phenomenon because it involves the development of individual abilities through shared, social, or interactive processes. Others have argued that motivational regulation and other similar processes are best conceptualized using the term co-regulation because they grow from the scaffolding, intersubjectivity, and cultural supports provided through social interactions (McCaslin *et al.*, 2006). Overall, these views emphasize that the knowledge, beliefs, attitudes, and skills individuals need

to regulate their motivation emerge from shared, dynamic, and socially supported experiences within culturally meaningful contexts.

Outcomes Associated with Motivational Regulation

Successful motivational regulation should, of course, have a positive influence on students' engagement, effort, or persistence for academic tasks. Ultimately, students who regulate their motivation most effectively should also exhibit better academic outcomes than students who fail to self-regulate their motivation. These benefits may be even more acute when a situation is particularly detrimental to ongoing motivation. Empirical evidence that expressly documents these anticipated relations, however, continues to be in short supply.

Some evidence for these links comes from research investigating more global indicators of students' regulatory activities. For instance, prior research has shown a link between overall measures of volitional control and positive educational outcomes (Corno and Kanfer, 1993; Kuhl, 1992). These studies have not, however, tended to assess and test motivational control or the regulation of motivation separately from other forms of volition. Moreover, these models have assumed a fairly broad view of motivational regulation. They have not accounted for potential differences in the types of motivational-regulation strategies that students use.

Two studies by Wolters (1998, 1999) contribute more direct evidence for the positive effects of motivational regulation. The college students studied by Wolters (1998) reported using many different types of motivational-regulation strategies. Findings from this study indicated that students who reportedly exerted some purposeful control over their level of motivation for academic tasks tended to have more positive academic outcomes than other students. Similarly, Wolters (1999) found that adolescent students' motivational regulation was related positively to their use of learning strategies, effort, and classroom performance. Not all studies examining these relations, however, have found a positive relation between indications of students' motivational regulation and achievement (Xu and Corno, 2003). An increased understanding of the specific motivational-regulation strategies students use at different ages, and how these strategies are related to other self-regulatory processes and to academic performance is an important goal for future research.

Conclusions

Motivation is an important process that undergirds students' engagement and achievement in academic contexts.

Students' ability to understand and purposefully influence their motivation, therefore, is a potentially critical influence on their learning and achievement. Motivational regulation has emerged and proven useful as a model for conceptualizing and understanding this process. Further, evidence specifically documenting the nature and importance of this process has begun to emerge. Students' ability to regulate their motivation has not, however, received the same level of attention as their ability to manage their cognitive processing and there is much left to investigate. More attention is needed for a better understanding of the different components of motivational regulation, as well as the most critical antecedents and substantial outcomes of this process both in the classroom and in academic tasks completed in other contexts.

See also: Achievement Goal Theory: Definitions, Correlates, and Unresolved Questions; Attribution Theory; Coping with Stressful Situations: An Important Aspect of Self-Regulation; Interest; Intrinsic and Extrinsic Motivation; Motivating Students in Classrooms; Self-Efficacy Beliefs; Volitional Control of Learning.

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Coping with Stressful Situations: An Important Aspect of Self-Regulation

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Coping with stressful situations includes coping with difficulties, obstacles, impediments, failure, shortcomings, impairments, handicaps, and liabilities. Several attempts have been made to classify the stressors that children and adolescents encounter in daily life. A distinction was made between acute and chronic stimuli that exert a taxing demand on the individual and require an adaptive response (Compas, 1987). Acute demands are caused by cumulative life events (e.g., parental divorce) and specific events, such as irritating, frustrating, and anxiety-provoking situations that occur in the classroom, at home, and on the way to school. These new demands may disrupt ongoing and upcoming activities, because the youngster must meet a sudden stream of threats and challenges. A successful attempt to cope with the acute source of stress signifies that a bridge has been built between the stressor and the existing coping repertoire. By contrast, several unsuccessful coping attempts may turn a situation into a chronic stressor.

Chronic stressors refer to recurring stressful life events that cause aversive conditions in the home (such as poverty, maternal depression, sibling rivalry) or the school environment (suboptimal learning conditions, teacher harassment, peer rejection, and feelings of academic inadequacy). Specific personal conditions may also create an enduring handicap or liability for the student, such as suffering from a chronic disease, physical handicaps, or learning problems.

Several questionnaires have been constructed to explore the major life events and daily hassles that students encounter in a school context. The data collected revealed that school stressors can be divided into social conflicts (e.g., unpleasant social exposure: rejection, bullying, harassment, and jealousy) and academic stressors (e.g., failures, overloads, exam stress). Both acute and chronic stressors impact on students' functioning, but the degree of the impact depends on the students' interpretation of the stressor and the coping strategies that they can bring to bear on the stressor. Research has described various adverse outcomes that are associated with lack of effective coping strategies, including several types of psychosomatic complaints (e.g., insomnia, headache, tummy ache, nervousness, feeling dizzy, and low back pain), absenteeism, fatigue, drop-out, and maladaptive social behavior. Interventions have been designed to help teachers and educators coach students' coping attempts. Before discussing some of these interventions, some the components of the coping process are discussed.

What Does Coping with Problematic Situations Entail?

When under stress, students report that their ongoing behavior is interrupted suddenly. They experience increased levels of arousal. Often they report negative emotions, such as anxiety, irritation, disappointment, shame, guilt, and sadness. They also report intrusive, repetitive thoughts about the event that caused the stress, and about the possible consequences of not being able to reduce the threat. They might inform about bodily changes as well, such as increased heart rate and perspiration, and about behavioral changes (e.g., aggressive or passive behavior).

It is important to realize that stress does not lie in the problematic situation itself. Rather, it concerns the way a potential stressor is interpreted. Each person comes to a stressful situation with either direct or vicarious experiences with the stressor. These prior experiences are activated at the time the stressor occurs and form a sort of internal context to interpret the problematic situation. At the same time, the person perceives and interprets the situation in which the stressor is currently embedded (external context). The significance that youngsters attach to a stressor and the way they interpret it depends on both the internal and external context.

An interesting question that was raised in this respect is: what is effective coping and which external and internal conditions promote (in)adequate coping? Questions such as these will never find a definite answer, because no solution is valid for all individuals at all times. An answer that sounds plausible is that personal functioning, development, and well-being are rooted in personal resources (e.g., self-efficacy, competence, resilience) and contextual affordances that facilitate the pursuit of one's salient goals and helps one to be resistant to life stressors and daily impediment.

Later in this article, some interesting issues about the effect of socialization and context on the development of (mal)adaptive forms of coping are discussed. For now, it is sufficient to understand that there are several conditions that should be met for a youngster to cope adaptively with classroom stress. In the first place, students should be able to appraise a problematic situation and determine whether that situation is changeable and controllable. Two other important conditions that should be met have to do with the selection of adequate coping strategies.

On the one hand, students need to regulate their emotional arousal. On the other hand, they should come up with a solution that produces a sense of mastery (Compas *et al.*, 1999). These important conditions are addressed next.

Appraising a Problematic Situation

Lazarus and Folkman (1984), the founders of transactional stress theory, view stress as the transaction between a person and the environment. They defined stress in terms of the individual's appraisal of the situation. More specifically, Lazarus and Folkman argued that any new, unexpected situation triggers a primary and a secondary appraisal. The primary appraisal determines how significant the situation is for well-being. Is it benign, threatening, or harmful? Does it harbor a loss of some kind? Situations are appraised as problematic when individuals detect a discrepancy between the perceived task demands and their own resources to meet these demands. Secondary appraisal determines the degree of the threat, challenge, harm, or loss. More specifically, the person assesses whether his or her coping resources are sufficient to deal with the situation. The degree of stress that is experienced depends on the balance achieved between primary and secondary appraisal processes.

Perrez and Reicherts (1992) proposed a way to explore the mental representation that a person makes of the stressor. They described five objective characteristics that individuals use to describe and categorize a stressful situation. These are: valence (how stressful or intense is the situation?), re-occurrence (will the situation re-occur in the future?), changeability (will the stressor go away by itself, without any actions being undertaken?), controllability (do I have control over the situation), and ambiguity (is there sufficient information to interpret the situation?).

Selecting a Coping Strategy

Based on their mental representation of the stressor, students select one or more coping strategies from their repertoire. What types of coping strategies can they select from? Lazarus and Folkman (1984) proposed a basic dichotomy between problem-focused and emotion-focused coping strategies. The former refers to efforts to change the situation by acting on the source of stress (e.g., work harder, problem solving). Emotion-focused coping refers to efforts to reduce the emotional distress by moving away from the source of stress either mentally or actually (e.g., denial, distraction). Other researchers described two slightly different universal ways of dealing with stressors, such as approach versus avoidance; active versus passive forms of coping; and primary versus secondary control coping strategies. They all argued that individuals tend to use habitual and preferential ways of dealing with specific types of stressors, but that there is no way of telling which coping

mode is most effective for a specific stressor. It is almost impossible to make any comments on the effectiveness of a person's coping strategies without knowledge of his or her coping goal. This issue is discussed further, later in the article.

Stress researchers working in educational psychology have used an empirical approach; they factor-analyzed the different coping strategies that students report using. The literature can roughly be divided into how students cope with unspecified stressors and with specific daily hassles. One of the most valid coping questionnaires is that of Frydenberg (2004). Frydenberg and her colleagues reported that 18 coping strategies are commonly used by adolescents, namely seek social support, social action (join people with the same concerns), seek to belong (improve relationships), invest in close friends, wishful thinking, worry, work hard, keep to oneself, seek relaxing diversions, physical recreation, focus on the positive, ignore the problem, tension reduction, seek professional help, spiritual support, self-blame, and not coping. Summarizing the results of several studies, Frydenberg reported age and gender differences. The younger students in her samples (11–13 years of age) reported more hard-work strategies and less self-blame and tension-reduction strategies than did the older students (15–16 years). Girls tended to address problems immediately and used more social support seeking, wishful thinking, and tension releasing than did boys. Boys adopted a wait and see strategy, preferring to manage by themselves rather than seek social support.

Bridging the Gap between New Stressors and One's Coping Repertoire

Children and adolescents are in a period of cognitive, emotional, physical, and social development. It is clear that situations that they consider problematic at one point in time may not be problematic a few weeks or months later. For example, at major transition periods (e.g., changing body image, changing schools) most youngsters appraise their daily life as chaotic and problematic. They cannot form an adequate mental representation of the new situation and find it difficult to deal adequately with the stressor. Often, they characterize the stressor as highly significant, re-occurring, unchangeable, uncontrollable, and ambiguous (e.g., I cannot find my way in the new school; I do not know the rules). Although such transitions are part of normal development, prior experiences of uncertainty and insecurity may be activated at the time the stressor occurs, thus forming an unfavorable internal context to interpret the new situation. At the same time, the student may perceive and interpret the actual situation in which the stressor is currently embedded as suboptimal (e.g., I do not have any friends here).

Fortunately, most students will pass these transitions smoothly, mainly because their habitual coping strategies prove to be adequate in the new context.

It is important to realize, however, that selecting a coping strategy to deal with a new stressor is not a one-shot selection process. It is a dynamic process that involves a series of transactions. For example, it is plausible that a student, who is confronted with a social conflict in class, uses emotion-focused coping before switching to problem-focused coping, or vice versa. In stressful situations, students have – very often – a direct, urgent need to restore their well-being, as well as a long-term intention to resolve the problem or conflict. During the coping episode, these short-term and long-term goals compete for dominance in the goal system as the following example illustrates.

Emily's teacher has just given class a challenging group assignment. Emily wants to start right away, but Maggie pressurizes group members to work in a manner they do not like. Emily protests and asks Maggie to explain why her method is better. Maggie ignores her and starts to give directions. Emily protests again, raising her voice. Other group members avert her gaze. Emily starts chatting with Lucy about her new skirt. They seemed to enjoy the interaction for a while and then joined the group in the problem solving process.

In order to interpret Emily's successive ways of dealing with the social stressor, we need to know the functions that different coping strategies serve during the coping episode. At first, Emily's focus was on the learning process, but Maggie's social pressure triggered negative emotions. Emily wanted to stand her ground and argued against the proposed working method, because she felt that one of her long-term goals was frustrated (not to let other students make decisions for her). At the same time, she felt a strong urge to avoid conflict and tension in her group, particularly when she noticed that the rest of her group did not openly support her protest. Hence, Emily opted for problem-solving coping initially but switched to emotion-focused coping later on. Research has shown that youngsters who rely on both types of strategies exhibit better overall adjustment than those who are limited to a single type of coping.

Coping and Volition: Two Essential Aspects of Self-Regulation

The notion of the purpose and function of coping processes is fundamental to the distinction that Lazarus and Folkman made between emotion-focused and problem-focused coping strategies. However, we need to know more than the students' appraisal of the stressor and their choice of coping strategies. We also need to consider

their intentions and goals in relation to the stressor, as well as their intentions and goals concerning the activity that was interrupted by the stressor.

At this point in the discussion, with a little digression, a point to note is that there are moments in the history of a discipline when concepts and models, stemming from a neighboring discipline, start penetrating into one's own theories and models. At this junction in time, a great deal of confusion, due to the simultaneous use of old and new labels, might be prevented if somebody compares and contrasts these different models and brings order into the multitude of constructs.

Elsewhere (e.g., Boekaerts, 2006), it is proposed to blend constructs and research findings from the coping and volition literature and integrate them into the self-regulated learning model. There is a distinction made between three types of self-regulation, namely top-down, bottom-up, and volition-driven self-regulation. Top-down self-regulation refers to goal pursuit that is driven by the students' own values, needs, interests, and goals. Bottom-up self-regulation occurs when specific cues in the learning environment create a mismatch with the students' current learning intention. Perception of a mismatch triggers cue-driven self-regulation with the purpose of engaging in activities to explore the nature of the mismatch. Discovery of obstacles and difficulties that are a threat to well-being elicit negative emotions. At that point, students' attention is drawn away from the activity they were previously engaged in. They either get involved in activities, which serve the purpose of regulating their emotional arousal, or engage in efforts to continue goal pursuit. The former strategies are called emotion-regulation strategies. They are akin to the emotion-focused coping strategies that are described in the coping with stress literature. The latter strategies, which are called volition-driven strategies, are akin to the problem-focused strategies that were described previously.

The three self-regulation strategies are visualized in Boekaerts' (2006) dual processing self-regulation model. The top part of **Figure 1** represents the formation of a mental representation, or appraisal, of a learning situation. The bottom part depicts the three self-regulation pathways. The broken line visualizes top-down self-regulation. Students start activity on the mastery pathway, when their appraisal of the learning situation is such that the learning goal is congruent with their personal goals. This match elicits dominantly positive emotions (e.g., Emily is interested in the task. She wants to increase her competence).

Activity on the well-being pathway (dotted line) begins when students initially appraise the learning situation as problematic or when they detect cues that signal a threat to well-being during the learning process. In our example, the pressure that Maggie put on the group created a mismatch with Emily's current learning intention and with her need for autonomy. This triggered negative

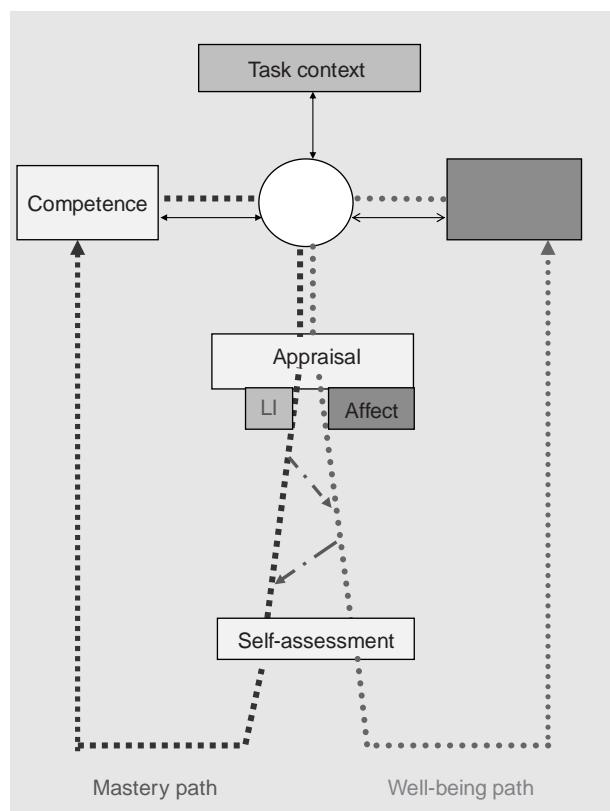


Figure 1 The dual processing self-regulation model. From Boekaerts, M. (2006). Self-regulation and effort investment. In Sigel, E. and Renninger, K. A. (eds.) *Handbook of Child Psychology, Vol. 4, Child Psychology in Practice*, pp 345–377. Hoboken, NJ: Wiley.

emotions and initiated a coping episode. At first, Emily stayed task-focused and tried to re-negotiate the working method (i.e., she used volitional strategies to stay on the mastery pathway). Her emotional arousal increased when she observed that Maggie ignored her and that the group did not support her either. Emily raised her voice, but when that did not help she opted for a different coping strategy, namely looking for distraction. Emily experienced positive emotions while chatting with Lucy and this gave her enough energy to redirect her attention to the learning process. This re-routing is visualized in **Figure 1** by a path that runs from the well-being pathway to the mastery pathway.

Emily's example illustrated that she made use of different strategies to regulate her emotions and to re-fuel the learning process. The next two sections review briefly what is known about these two types of bottom-up strategies.

Regulating Emotional Arousal

Emotions are an inherent part of human functioning. Emotions are tightly linked to the context and what the student is trying to do. Experiencing negative emotions signals to the

individual that something is wrong and that it is important to monitor the context carefully. By contrast, positive emotions signal that everything is fine and that there is room for exploration and play. Why can some students regulate their emotions more effectively than others? The ability to regulate one's emotions refers to the capacity to understand one's own emotions and their expression. Students may or may not understand that emotions are sources of energy and they may or may not be able to override them when salient goals should be pursued.

Inability to temper the intensity and duration of one's emotional arousal (e.g., worry, self-blame) hinders functioning in a social context, whereas the capacity to temper one's emotions (e.g., tension reduction, relaxation, and distraction) facilitates functioning in a social context. It helps students to feel self-efficacious, appraise the classroom environment in a positive way, and the learning and problem-solving process as constructive. It is important to realize that modulating one's emotions does not necessarily imply that one has to play them down. At times, it may be beneficial to express one's emotions, amplifying them so that people present in the situation can take account of one's feelings. Children realize that the way they communicate their emotions affects their peers' subsequent reactions to their behavior. For example, Emily raised her voice, hoping that Maggie would listen to her protest. Maggie's reaction informed her that this was not a good strategy to use and she switched to distraction.

Eisenberg and Spinrad (2004: 4) showed that not all students are able to regulate their emotions strategically. They cannot temper their emotions in such a way that they can continue the (social) activities that they were engaged in at the moment the emotion was triggered. Research shows that parental modeling and coaching plays an important role in the way children regulate their emotions. Children who grow up in families with intense marital conflict develop either aggressive coping strategies and externalizing behavior problems (particularly boys) or acute distress reactions (particularly girls). Ramsden and Hubbard (2002) showed that the way children rated their own emotion regulation predicted aggressive behavior best. Interestingly, the overall degree of negative expressivity in the family coincided with a low rating of emotion regulation, whereas family acceptance of the child's emotions was associated with higher emotion regulation. These researchers pointed out that children, who grow up in families with moderate structure and availability of social support, have a larger repertoire of coping strategies to choose from.

Volitional Strategies: Finding a Solution That Produces a Sense of Mastery

Many common educational practices reduce students' intrinsic interest in academic learning, such as a focus on evaluations and grading, and presenting tedious, ambiguous,

and uncontrollable tasks. Why can some students remove obstacles to intrinsic sense making and persist in the face of difficulties whereas others cannot? Volition-drive self-regulation refers to the ability to maintain focus and effort toward learning goals despite obstacles and distractions. The capacity to get started on learning tasks or continue working on them, when one gets sidetracked by competing goals, facilitates functioning in a classroom and homework context. For example, it helps students to protect their intentions, specifically when difficult work must be completed. It is important to realize that having access to volitional strategies, which Randi and Corno (2000: 5) call good work habits, is essential for re-routing activities from the well-being to the mastery pathway. These include, how to organize one's work, keep distractions at bay, make a time schedule and stick to it, how to resolve conflicts, how to set goals and sub-goals and prioritize them, and how to monitor progress. Socialization practices impact on the development of volitional strategies and it is important that teachers and parents enhance willpower by modeling it and discussing its effectiveness with students. An interesting study by Hill and Craft (2003: 5) reported that parental involvement in school tasks also affects performance. They found that the effect of parental involvement on math performance was mediated by emotional regulation, the children's tendency to accept authority, and their ability to initiate activities and stay on track.

How Can We Help Students Cope with Stressful Situations in the Classroom?

In the previous sections, it has been argued that students need to know which conditions trigger stress and need to practice how they can deal strategically with increased levels of arousal. Often, initial attempts to deal with a stressor fail because students do not know which strategies are most effective in a given context. Alternatively, they might have this knowledge but fail to generate productive strategies at the point of use. In the remainder of this article, two intervention studies that provided insight into how teachers and educators might coach students' coping attempts (for a more extensive review, see Pincus and Friedman, 2004) are described.

Stress Interventions Coach Students' Coping Attempts

Cunningham *et al.* (2002) argued that many adolescents manage their coping resources ineffectively. They hypothesized that low coping efficacy is associated with a pessimistic attributional style (i.e., positive outcomes are viewed as specific, temporary, and caused by luck) and nonproductive coping strategies. These researchers set up an

intervention to decrease nonproductive, emotion-focused coping strategies (worry, wishful thinking, tension reduction, ignoring the problem, self-blame, and keeping to oneself). After an 8-week training period, the students had a greater sense of control over their internal states as compared to controls, showed significantly less depressive attributions, and a decrease in nonproductive coping strategies. Contrary to expectation, no change was found in the use of productive strategies. The reason could be that the researchers' focus was on what the students should not do, rather than on the use of productive coping strategies.

An interesting study by Zimmerman and Kitsantas (2002) showed that students need to have the chance to build up conditional knowledge about the types of obstacles they may encounter during skill development and about the coping strategies that are effective to deal with these obstacles. They found that students, who had observed how a model flawlessly performed a new skill (here: dart throwing and writing-revision strategies) surpassed students who did not have the chance to observe a model perform the task. However, students, who had been exposed to a coping model before they had to practice the skill, outperformed the former group. Why? Watching a coping model struggle to implement emotion regulation and volitional strategies informed the students that the new skill is complex and difficult to implement and that stressors may come in one's way, yet realize that the stressor is changeable and controllable. This information is stored as conditional knowledge and allows students to bootstrap their strategy use and efficacy beliefs. Zimmerman and Kitsantas reported that the coping model condition produced not only better observational learning but also more effective practice experiences and superior acquisition during post-testing than the mastery model or no model condition.

It is easy to implement the coping model condition in the classroom, allowing students to build up information about the personal resources that are necessary and sufficient to deal with the obstacles that may come on their way and about the contextual affordances that facilitate the pursuit of the learning goals. The final point is that there is an urgent need to train teachers to coach volitional and coping strategies.

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SOCIAL RELATIONS IN MULTIPLE LEARNING ENVIRONMENTS

Children's Friendship

Social Development and Schooling

Seeking Help as an Adaptive Response to Learning Difficulties: Person, Situation, and Developmental Influences

Understanding How Leadership Influences Student Learning

Competition and Student Performance

Socioemotional Aspects of Technology-Supported Learning

Social Networks and the Education of Children and Youth

Social and Cultural Capital in Education

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Children's Friendship

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Friendship is a close dyadic relationship characterized by a shared history, mutual affection, and a recognition by both participants that the relationship has a special status, which sets it apart from mere acquaintanceship or colleagueship. Friendship carries with it certain expectations, such as companionship, cooperation, instrumental help, loyalty (reliable alliance), confiding, and emotional support. Furthermore, friendships tend to be characterized by relatively equal power between relationship partners, especially compared to the parent-child relationship. For most people, a close friendship is their first nonfamilial intimate relationship that is freely chosen. A comparison between friendships and sibling relationships is also instructive. When siblings argue or have a falling out, they continue to be siblings even if they do not engage in relationship repair. On the other hand, as friendships are typically voluntary, friends need to work at maintaining the relationship or they risk the friend withdrawing from the relationship.

Although being a friend inevitably carries expectations, these expectations differ somewhat as a function of age. When interviewed or surveyed, young children report friendship expectations that center on play and companionship. In middle childhood, there is an increased emphasis on sharing, cooperation, and helpfulness, and in adolescence young people report greater expectations for intimacy, shared confidences, and emotional support. However, interviews and surveys may underestimate the richness of even young children's friendships. When children as young as 3 years of age are observed playing with their best friend, many examples arise of children cooperating with one another, providing emotional support, and sharing confidences. The fact that some of these processes occur within the context of fantasy play adds to their charm but does not detract from the evidence that even young children can display more developmentally advanced friendship processes.

Characteristics of friendships may differ to some degree as a function of gender. Girls and boys do not differ in their reports of how much companionship or conflict they have in their friendships; however, girls do report more help and guidance, emotional support, intimacy, and ease of conflict resolution. Yet boys and girls do not differ in the number of close friends they have in their class, their satisfaction with their friendships, or their loneliness in school, suggesting that we need to more extensively observe the friendships of boys, in order to better understand interaction processes in their friendships.

Characteristics of friendships also vary across cultures. In many cases, friendships are voluntary relationships that children choose to form and can terminate if they wish. However, in some cultures, friendships may become formalized relationships that are unbreakable, such as ceremonial friendships or 'blood brotherhoods.' In addition, the expectations held of friends and the importance placed on certain features of friendships can vary widely from culture to culture. For example, Indonesian children describe instrumental aid as a more central feature of their friendships than do American children, whereas American children describe enhancement of worth, companionship, and reliable alliance as being more important in their friendships than do Indonesian children.

Measuring Friendship in School and Distinguishing Friendship from Peer Acceptance

There is a long tradition extending back to the late 1920s of using sociometric measures, or measures of interpersonal attraction, to identify classroom friendships. Typically children are asked to name their best friends in their class or grade. Researchers can ask children for a limited number of nominations (e.g., their best three friends) or can use an unlimited nomination measure in which children can name all their friends in their class or in their grade. Several improvements have taken place in sociometric friendship assessment over the years. First, children are typically given a roster with names of schoolmates to circle rather than relying on children's ability to recall and write down their classmates' first and last names. Second, for young children, photographs of schoolmates are used instead of a class roster, again to overcome literacy or memory constraints. Third, researchers have distinguished between unilateral and reciprocal nominations, and most typically define a friendship as existing when two children mutually nominate one another as opposed to one child nominating the other but the other failing to reciprocate the nomination. With this methodology, children can be assigned a score based on the number of reciprocated friendship nominations they have.

Note that the number of friends that children have does not speak to the stability or the more qualitative features of their friendships. To measure the stability of a friendship, repeated sociometric surveys are needed to learn whether

friendships are maintained. Furthermore, to learn about the qualitative features of friendships (e.g., levels of companionship, emotional support, or conflict), children can be observed or interviewed about their friendships. Research on stability and qualitative features of friendship indicates that these are extremely important dimensions. For example, children who have more stable friendships and higher-quality friendships are less lonely at school.

Furthermore, it is also important to distinguish children's participation in friendships from their overall acceptance by the peer group. Peer acceptance refers to how well a child is liked by the group as a whole. Peer acceptance is typically measured in one of two ways. One approach is to ask children to nominate three children in their class or grade they like the most and three children they like the least. Researchers then typically calculate a social preference score, which is the number of liked least nominations subtracted from the number of liked most nominations a child receives. This score can be standardized by grade or class and can also be standardized within gender. Alternatively, children can be asked to complete a sociometric rating-scale measure of acceptance in which they rate each of their classmates or grademates on a Likert scale in terms of how much they like each person, or how much they like to play or work with each person. With this measure, acceptance scores are the average ratings received by peers, typically standardized within classroom or grade and gender.

Research using a rating-scale measure of acceptance and mutual friendship nominations to index friendship indicates that children can be well-liked by their peers but not have close friendships at school. Likewise, children can be generally disliked by classmates but still have one or more friends (subgroups of highly aggressive children are likely to be in this situation). Overall, the correlation between the number of mutual friends children have and their acceptance by peers is approximately 0.50, suggesting that there is unique variance associated with each index of peer adjustment. Evidence in support of the friendship-acceptance distinction comes from several lines of inquiry. First, having friends and being liked by peers make distinct contributions to children's early school adjustment. Second, having friends and being accepted by peers independently predict to feelings of loneliness at school and to whether or not children are victimized by peers. Third, children are less likely to form friendships with peers of a different race than they are to like or accept them. Finally, social skills intervention studies have repeatedly found that children can make gains in peer acceptance yet not make gains in their number of good friends.

In the section that follows, the focus is on the effects of friendship on school adjustment; however, several of the supplementary readings may be useful for readers interested in learning more about acceptance and school adjustment.

The Effects of Friendship on School Adjustment

Children's friendships provide validation, emotional support, a context for self-disclosure, companionship, help and guidance, and reliable alliance. These provisions in turn serve protective functions in children's lives at school. Indeed, children with friendship difficulties are at risk for a variety of social-emotional adjustment problems in school, including increased social anxiety, lower self-esteem, and increased likelihood of loneliness and depression. One reason that children lacking friends may feel worse than children with friends is that having friends can protect children from being victimized by peers. Children with friends at school are less likely to be victimized, especially when their friends are strong and protective.

It should be noted, however, that the benefits of friendship may be moderated by friendship quality and stability. Having friendships that are high in positive qualities and that are relatively stable is associated with increases in self-esteem over time for children; however, if friendships are high in negative qualities, this is less likely to be the case. Further, if children are in friendships in which their friend is treating them badly, it can be particularly distressing. When friends interact in negative or hostile ways with one another, children show increases in internalizing problems such as anxiety, social avoidance, and loneliness.

One of the compelling findings about friendship and school adjustment is that children who are not nominated by any of their peers as being a friend are much more likely to drop out of school years later. Undoubtedly, having friends is part of the glue that keeps children connected to school. The academic benefits of friendship are evident as early as in the first years of school. Kindergarten children who enter school with friends or who make friends during the school year are better adjusted to school (on indexes such as attitudes toward school, school anxiety, and absenteeism) at the end of the year than children who do not.

Here, too, the association of friendship with school-adjustment may be moderated by the quality of a child's friendship. For example, kindergartners who report receiving help from a friend increase in their liking for school more than those children who did not receive help from a friend. Further, children who report more positive qualities in their friendships also report being more involved in class and feeling more accepted by peers. Conversely, having friendships that are high in unresolved conflict is predictive of being more disruptive in class and being less involved in school.

The characteristics of a child's friends may also affect the child's academic success and achievement motivation. The academic performance of a child's friends is associated with the later academic performance of the child. For instance, if a child's close friends get higher

grades then the child is more likely to improve, but if a child's close friends perform poorly, then his or her performance is also likely to suffer. This influence may occur through a variety of processes, such as tangible help (or lack thereof) that friends provide each other, discussions about schoolwork, or through increasingly similar beliefs and attributions about academic achievement and the causes of academic success and failure. It is also important to note that even though being friends with children who are high achievers may increase a child's academic performance, this friendship may also increase the child's negative self-evaluations due to social comparison between the self and the friend.

Just as friends influence the achievement orientation of one another, they also influence children's tendencies to be prosocial or antisocial in their behavioral orientations in school. Children who affiliate with antisocial peers are more likely to engage in antisocial behavior themselves. Antisocial children positively reinforce each other for antisocial behavior even in their conversations about previous delinquent behavior. Since high levels of antisocial behavior are predictive of school dropout, friends who engage in 'deviancy training' with one another are, in effect, contributing to one another's eventual withdrawal or suspension from school.

As children move into adolescence, their friendships are embedded in cliques and larger groups called crowds (e.g., athletes, academic nerds, populars, and druggies). Children within cliques and crowds have shared interests in particular activities and also frequently share beliefs about the value of school achievements. Schools, too, can differ markedly in the extent to which the peer group values achievement. Accordingly, cliques, crowds, and overall peer culture at schools make their own independent contribution to school adjustment.

The Social Tasks of Friendship

Since acceptance by peers and participation in friendship are positively correlated, many of the interpersonal skills related to getting along with peers are also related to being able to make and maintain friendships. In general, it benefits children to be prosocial (i.e., friendly, cooperative, kind, and helpful), to be competent academically and athletically, and to have a good sense of humor. Nonetheless, friendship is a rich and complex context that poses specific kinds of challenges for children that go beyond the social tasks involved in maintaining harmonious relationships with the group as a whole. The friendship tasks that children face include forming a friendship (which means moving a relationship beyond an acquaintanceship or colleagueship), managing conflict and responding to friendship transgressions, providing help and reliable alliance, and self-disclosure.

Forming Friendships

At the core of friendship is companionship, recreation, shared activities, and having fun together. Children who are good at generating enjoyable activities, are good at games and sports, knowledgeable about peer culture, have a good sense of humor, and interact with a spirit of fairness are more likely to be enjoyable play partners.

Forming friendships often calls upon children to initiate interactions and a relationship with another child. This task involves being able to approach another child in a positive manner, to be able to initiate conversation, and/or suggest a joint activity. Part of the social task of initiating interaction is coping with the task of group entry. Children in school contexts are faced with the continuing problem of how to get access to a group of children who are playing together. Children who are skillful at taking the perspective of other group members and thereby gently easing their way into the ongoing interaction are generally more successful than children who more egocentrically attempt to plow ahead and disrupt the ongoing activity. Successful initiations of interactions also involve being responsive to others initiations. Children who respond warmly and positively to others' initiation attempts are more likely to be sought out to play by peers. Even in infancy and toddlerhood there are large individual differences in how children respond to the initiations of others.

In the early childhood years, parents are likely to play a more active role in initiating contact with other children outside of the school context. For example, they may arrange a play date at home or at a local park. Indeed, parents who are skillful planners of their children's social world and engage in indirect, nonintrusive but competent monitoring of children's play, have children who are more successful at making friends. As children grow older, however, initiating play dates becomes more of their responsibility, although parents maintain an important role by providing transportation or enrolling children in programs such as youth sports, church groups, or dance classes. Neighborhood characteristics also play important roles. For example, where heavy concentrations of children live in close proximity, less scaffolding by parents is required. Furthermore, environmental features such as access to neighborhood parks, public transportation, and safe bike routes affect the extent to which children can initiate their own friendship contacts.

It should also be noted that friendship formation between children is facilitated by physical propinquity. When children are asked to name their 'best friends in the world,' a high proportion of the children named are actually in their classroom or neighborhood. Physical propinquity is a powerful force in children's friendships, much the same as in adults' friendships. With regard to similarity, the role of demographic characteristics is not to be underestimated. For example, the great majority of

elementary-school-age children's friendships is with children of the same gender. Likewise, children tend to form friendships with children of their own race and social class. Similar interests and activities (a shared interest in sports, video games, music, etc.) are also bases for friendship formation. Indeed, children whose interests are highly discrepant from the interests of the mainstream peer group may have difficulty forming friendships within that group. In relation to this, one important role that parents play in their children's social lives is fostering interests in their children that help them connect with other children and thereby form friendships.

Beyond initiation, children need to be able to sustain interaction with peers to form friendships. Even in the preschool years, children can be observed engaging in extended play bouts, often in the context of shared fantasy (e.g., playing firefighters or playing house). For play to continue harmoniously as children grow, they need to develop increased communication skills, such as listening well to their partner, communicating in a contingent way (such that their utterances relate in a meaningful and relevant way to those of their partner), and amicably resolving disagreements.

Managing Conflict and Responding to Friendship Transgressions

Children can be successful at initiating friendships but are still not successful at maintaining friendships. Conflicts are virtually inevitable in friendships and friendships often rise or fall based on how well the parties resolve disputes when they arise. Responding to conflict is particularly challenging for some children and there are large individual differences in the goals and the behavioral strategies that children enact in conflict situations. Children who focus on maintaining a good relationship with their partner and who engage in cooperative and compromising strategies are more successful in their friendship than those who focus exclusively on getting their way. Further, children who are vengeful in conflict-of-interest situations with friends have fewer friendships and, if they do have a friend, their friendships are of lower quality. Indeed, children's goals and strategies in conflict situations predict success at friendship even when statistically controlling for children's levels of peer acceptance. Here, again, adults (both as parents and teachers) can play a valuable role by helping to mediate disputes or, better still, by teaching children conflict-resolution strategies.

Just as conflicts are virtually inevitable in friendship, it is not possible for friendships to extend over time without incidents of minor, or even major, friendship transgressions. As discussed above, friendship carries expectations for companionship, cooperation, instrumental help, loyalty, confiding, and emotional support. These expectations, usually strongly held, mean that children are vulnerable to feeling

sad, hurt, or angry when a friend violates a core expectation of friendship. Examples of transgressions include friends canceling play dates, preferring to be with another friend on a particular day, refusing to provide help when help is needed, or sharing a secret with others. When transgressions occur, children make inferences about the meaning behind the action of the friend. A fundamental question is whether the friend meant to cause harm or simply had other needs, goals, or external pressures that were temporarily interfering with the ability to be a good friend. Children who attribute hostile intent or infer that the other person's actions are a sign of lack of caring, rejection, or disregard are far more likely to want to get even or terminate the relationship. As part of this reaction they are also more likely to engage in negative behavior, including physical, verbal, and relational aggression (intended harm through the damage of another person's relationships or social standing).

Friendships are embedded in the larger peer network of cliques and crowds. Knowing how to effectively manage dyadic relationships in this larger peer context may be particularly challenging for some children. For instance, friends have other friends and if children have high expectations of exclusivity in their friendships they may become jealous. Jealousy is a cognitive, emotional, and behavioral reaction set off by the perception that one's partner prefers a relationship with someone else. Young adolescents who are more jealous in their friendships report lower self-worth and more loneliness. The jealous child conceives of friends having other friends as a friendship transgression rather than an expected part of social life.

Providing Help and Reliable Alliance

As children move into the primary school years, there is an increasing expectation that friends will provide help, guidance, and tangible forms of assistance. This can range from small things such as loaning a friend a pencil in class to larger tasks such as helping a friend with homework or a chore. It also involves providing advice and/or emotional support when a friend is coping with familial, school, or peer relationship difficulties.

Help-giving requires special cognitive and social skills. As in the task of group entry, perspective taking plays a key role. In addition, children need effective communication skills to elicit important information before offering advice. They also need a broad knowledge base of effective solutions to problems that can arise in everyday life. Further, when no easy solution is in sight, friends can help by distracting a child by providing reliable and enjoyable companionship.

Friends also help each other by serving as reliable allies. Friends count on each other, stand up for each other in threatening (e.g., bullying) situations, and have each other's best interests at heart. Having both emotional

and instrumental support from friends can increase children's sense of belonging in school, protect children from stress, and foster a sense of security which in turn facilitates the self-disclosure that occurs when friends confide in one another.

Self-Disclosure

Self-disclosure, or the sharing of personal information with another person, is a central feature of many friendships, particularly in adolescence. This is consistent with a major concern that arises at this stage of development, namely self-exploration and the development of identity. Sharing high levels of intimate information can be risky unless the friend can be relied upon to treat information as confidential and not share it with others. Through reciprocated self-disclosure, children form a sense of emotional closeness and acquire extensive knowledge about one another. Part of a shared history of a friendship is not just the activities or events that friends share together but the detailed and intimate knowledge they have of the other person. As a result, friends know far more about one another than do nonfriends.

One interesting complexity about self-disclosure deserves comment. Although friendships that are high in self-disclosure are more likely to be close friendships, co-ruminating with friends, or excessively discussing problems and focusing on the negative feelings associated with those problems, may have negative emotional consequences for children and adolescents, especially girls. To illustrate, although co-rumination is associated with higher-quality friendships for boys and girls, it is also associated with higher levels of anxiety and depression for girls.

Interventions to Promote Friendships

Given the powerful role of friendship in children's social-emotional and academic adjustment, effective intervention methods are needed for helping children who lack friends and for children whose friendships are of lower quality. Interventions to promote friendship have taken various forms although, on the whole, far more research is needed. Evidence exists that placing children in cooperative work groups can lead children to form friendships across racial lines, although the long-term maintenance of newly formed friendships has not been investigated. There is also evidence that children who lack friends can make a friend when put in a school context where they get to interact with classmates during a pleasurable activity (e.g., planning for and putting on a skit for the class). However, in this case, follow-up assessments suggest that the positive friendship outcomes of this type of intervention do not endure once the activity has ended. This evidence, along with other research indicating that children who lack friends are less socially skilled, suggests

that providing opportunities for enjoyable interaction may not be sufficient and that instead some form of social relationship skill learning opportunities is needed.

Interestingly, several social skills training studies carried out with 8- to 10-year-old children in elementary schools have found that teaching certain social relationship concepts leads to significant gains in overall acceptance by peers, but not necessarily gains in best friendship. In these studies, children were taught core concepts of social interaction (e.g., staying involved in the game or activity, cooperating, and being friendly and supportive) and given opportunities to try out the ideas by playing a game or doing an activity with a peer. Following these interactions, the child was given the opportunity to reflect further on the concepts in light of his or her immediately preceding peer interaction experiences. A potential next step for educational researchers could be to learn whether this kind of direct instruction approach for promoting social competence could be successfully adapted to help children develop friendships and to achieve friendships that have positive qualities. Such research is certainly needed given the important role that friendship plays in children's academic success and emotional well-being.

See also: Peer Interaction and Learning; Social and Emotional Outcomes of Learning; Social Development and Schooling; Social Interaction and Learning; Social Networks and the Education of Children and Youth; Wellbeing.

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Social Development and Schooling

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Glossary

Friendship – A voluntary, dyadic peer relationship that is typically characterized by reciprocal liking, preference for each other's company, frequent association or interaction, and a positive affective tie between the partners.

Peer-group acceptance/rejection – A concept that refers to children's relations with members of their peer group (e.g., classmates) and is defined in terms of group member's sentiments (i.e., liking vs. disliking) toward the child, and the degree to which these sentiments become consensual. Measures of this construct indicate the extent to which a child is liked versus disliked by members of his or her peer group (e.g., classmates).

Peer victimization – A form of peer relationship in which children are frequently targeted by peers for verbal and/or physical aggression, or other forms of harassment or abuse.

Attempts to describe the demands of schooling and children's educational readiness suggest that classroom environments present children with a complex array of scholastic and interpersonal challenges, all of which require some degree of adaptation on the part of the child (see Ladd, 2003). These diverse challenges – depending on the child and the resources or constraints that are operating in the child's environment – may affect children on many levels and have both immediate and long-term effects on their development and performance in the school context.

Schooling Presents Children with Social as well as Scholastic Challenges

Some of the most obvious challenges of schooling are scholastic in nature, and stem from the instructional features of classrooms, such as didactic small- and large-group instruction, teacher-initiated/monitored learning activities, and programmatic curriculum sequences. Less well recognized are the many types of interpersonal challenges that children confront in school.

During the transition into formal schooling, children typically are faced with shifting social ecologies,

relationships, and resources. Studies show that, as children enter school, most are thrust into new peer groups with unfamiliar classmates (see Ladd and Price, 1987). As the adult-to-peer ratio is often smaller in classrooms than it is in family or preschool environments, interactions with peers become more common than those with adults, and competition for adult attention increases. Opportunities for mixed-age companionship are rare because, unlike family or neighborhood environments, grade school classrooms are segregated by age. The result is that, once in school, children are under greater pressure to succeed among equals. They must succeed at forming relationships with agemates while also competing with peers for resources and recognition.

In addition to the demands of the classroom peer milieu, children are confronted with the challenge of forming relationships with their teachers. During the transition to grade school, children often lose ties that were formed with preschool or day-care teachers and embark on a relationship with their grade-school teachers. Initially, this relationship may be a source of care giving, but over time, the teacher's primary role is to challenge children in ways that promote learning and development.

Many of these same challenges are repeated as children progress through the grades. In each new classroom they must negotiate their needs in dyadic and group interactions and reestablish or form new relationships with classmates and teachers. Moreover, it is likely that these challenges are intensified when children change schools, or cope with school transitions (see Ladd *et al.*, 2006).

Do Social Relations Play a Role in How Children Adjust and Perform in School?

Although considerable evidence has been gathered on the precursors of children's school adjustment, most of what has been discovered points to the importance of children's cognitive and linguistic skills, their physical-motor skills, and their socioeconomic and ethnic backgrounds. Only recently have researchers systematically explored children's classroom social behavior and relationships as predictors of their school adjustment. This is surprising when one considers that education is, in many respects, a social enterprise. Most modes of instruction require that teachers and students communicate and engage in social interaction. Likewise, educators have become increasingly reliant on peer-mediated activities (e.g., peer collaboration and

tutoring and cooperative learning groups) to promote classroom learning and achievement.

Fortunately, recent theory and evidence on the interpersonal foundations of learning and achievement has elevated this topic's importance within the educational community (e.g., see Hamre and Pianta, 2001; Ladd, 2003). As a result, greater investigative attention has been devoted to the hypothesis that social relations in the school context may influence multiple aspects of children's school adjustment. In particular, it has been proposed that classroom social relations may be instrumental in shaping children's: (1) perceptions and appraisals of school and the classroom environment, (2) psychological and emotional reactions in this context, including both internalizing and externalizing problems, (3) involvement and disengagement in classroom activities, and (4) achievement and academic progress (see Ladd, 2003).

Are Children's Behaviors with Classmates and Teachers Associated with Their School Adjustment?

It has been postulated that the way in which children behave toward classmates and teachers has an important bearing on how they will adapt to school, and progress academically in this context (Ladd, 2003). A key premise within most of these perspectives is that many of the processes and conditions that are essential for learning, such as curiosity, interest, attention, motivation, perceived support, and feelings of competence and security, develop from the interactions children have with their classmates and teachers.

Most of the child behaviors that have been examined as correlates or antecedents of school adjustment can be classified into three categories, termed withdrawn behavior (e.g., avoiding others; being unsociable), prosocial behavior (e.g., cooperating with others), and aggressive behavior (e.g., harming others). Each of these forms of behavior has been linked with children's early and later school adjustment.

Children Who Avoid, Withdraw from, or Remain Solitary among Classmates

Although early studies produced mixed findings, recent evidence suggests that withdrawn children have difficulty adapting to school (see Ladd, 2005). Several subtypes of withdrawn children have been studied (e.g., asocial-withdrawn, anxious-withdrawn, active-isolated, depressed-withdrawn, and aggressive-withdrawn children; see Harrist *et al.*, 1997; Ladd and Burgess, 1999), and it appears that some forms of withdrawn behavior impose greater risk for school adjustment problems than others. During the grade school years, children who fit the depressed-withdrawn subtype tend to exhibit elevated rates of peer neglect and rejection (Harrist *et al.*, 1997), and children who manifest

stable patterns of anxious-withdrawal exhibit higher levels of depression (Gazelle and Ladd, 2003). Aggressive-withdrawn children also appear to be at risk for several types of school adjustment problems. Ladd and Burgess (1999) followed children who displayed two forms of withdrawal – asocial-withdrawn and aggressive-withdrawn behavior – from kindergarten to grade 2 and compared them to samples of nonwithdrawn-aggressive children and normative, matched controls. Across these grades, children in the aggressive-withdrawn group were more likely than normative, matched controls to become rejected by classmates and form teacher-child relationships that were high in conflict and dependency and low in closeness. The relationship difficulties of asocial-withdrawn children, in contrast, were found to be more transient. These children exhibited more dependent relationships with their teachers as they began kindergarten, but not thereafter.

Children Who Are Prosocial or Aggressive toward Others

Children's propensity to engage in prosocial behavior in the classroom represents another potential determinant of their school adjustment. Ladd *et al.* (1999) found that kindergartners who often interacted prosocially with classmates during the first 10 weeks of kindergarten tended to develop mutual friends and had higher peer acceptance by week 14. Other data show that as early as preschool and kindergarten, aggression is common in classrooms and is a significant predictor of later school adjustment. Ladd and Price (1987), for example, found that children who were aggressive toward many rather than a few classmates in preschool classrooms were more likely to develop social difficulties after they entered kindergarten. Similarly, Ladd and Burgess (1999) found that aggressive kindergartners were more likely than their counterparts in a matched risk-comparison group to develop and maintain social difficulties with classroom peers and teachers throughout the early primary grades.

Even more compelling were findings reported by Ladd and Burgess (2001). These investigators reported that aggressive kindergartners exhibited gains in thought problems, misconduct, and classroom disengagement, and were prone toward underachievement and the formation of negative school attitudes as they progressed into the primary school years. Furthermore, children who tended to be chronically aggressive (i.e., remained aggressive across more than 1 year of grade school) were even more likely to exhibit serious or severe forms of school maladjustment.

Findings from research on middle- and high school children further substantiate the link between aggressive behavior and school adjustment difficulties. For example, Kupersmidt and Coie (1990) followed children from grades 5–10 and found that aggressiveness among fifth graders forecasted higher levels of delinquency among

10th graders, and that both aggression and absences were associated with later dropout rates. Other findings suggest that aggression is a better predictor of dropping out of school for boys than for girls (see Ladd, 2005).

Children's propensities to engage in withdrawn, prosocial, and aggressive behaviors also have been linked with features of the teacher-child relationship. In a longitudinal study, Birch and Ladd (1998) found that children's aggressive behavior in kindergarten predicted higher levels of conflict and lower levels of closeness in their relationships with kindergarten and first-grade teachers. Although kindergartners' prosocial interaction styles were associated with teacher-child closeness in both kindergarten and grade 1, this link was not as robust as that found between aggressive styles and teacher-child conflict.

Are Children's Relationships with Classmates and Teachers Associated with Their School Adjustment?

Another line of research has been guided by the premise that children's relationships with classmates and teachers immerse them in processes (e.g., participation vs. exclusion, support vs. conflict, and receiving assistance vs. being ignored) that affect their ability to adapt to school challenges which, ultimately, affects their development in this context (amount of learning, level of school engagement; increases or decreases their sense of worth, competence, etc.; see Ladd, 2003, 2005). As relationships bring different processes to bear upon children and confer different provisions, they vary in adaptive significance for school-related demands (Ladd *et al.*, 1997). In the next three sections, the adaptive significance of several types of classroom relationships is considered.

Classroom Peer Acceptance and Rejection

A growing corpus of findings link children's acceptance or rejection by classroom peers with indicators of their school adjustment (see Ladd, 2005). Early peer rejection – at school entry – has been shown to predict problems such as negative school attitudes, school avoidance, and underachievement during the first year of schooling and thereafter (Ladd, 1990; Ladd *et al.*, 1999; Ladd and Burgess, 2001). Later, in the elementary years, peer acceptance has been linked with loneliness (Parker and Asher, 1993), conduct problems (Ladd, 2006), lower emotional well-being (Ladd, 2006), and academic deficits (Ladd *et al.*, 1997).

Researchers have also attempted to distinguish the contributions of peer acceptance and rejection from those of other classroom relationships. Ladd *et al.* (1997, 1999) found that, even after controlling for other forms of peer and teacher-child relationships, peer rejection predicted

children's participation in the classroom which, in turn, was linked to later achievement. In a similar study, Buhs and Ladd (2001) found that children's peer acceptance at school entry predicted changes in classroom participation which, in turn, predicted later academic and emotional adjustment. In general, these results support the premise that peer acceptance promotes social inclusion which, in turn, yields provisions (e.g., sense of belongingness and engagement in learning activities) that enhance children's interpersonal and scholastic adjustment (Buhs *et al.*, 2006).

Classroom Friendships

Investigators have studied several indicators of classroom friendships, including children's participation in a close friendship, the number of mutual friends they have in their classrooms, the duration of these relationships, and features that reflect the quality of a friendship (see Ladd, 2005). There is growing evidence linking one or more of these facets of friendship to children's school adjustment.

As children enter school, those who find prior friends or form new friendships in their classrooms tend to form favorable school perceptions and do better academically than peers with fewer friends (Ladd, 1990). The processes that typify friends' interactions have also been linked to children's school adjustment. For example, Ladd *et al.* (1996) detected variability in the quality of the friendships that children formed as they entered school, and found that children who saw their friendships as offering higher levels of support and aid tended to see their classrooms as supportive interpersonal environments. Conversely, children (especially boys) who reported higher levels of conflict in their friendships exhibited lower levels of classroom participation. Likewise, it appears that friends facilitate adjustment as children progress through grade school. Findings from a study conducted with third through fifth graders showed that children with supportive friends felt less lonely in school (Parker and Asher, 1993).

Although less well understood, there is some evidence to suggest that friendships do not always contribute positively to children's school adjustment. Berndt and Keefe (1995), for example, found that fighting and disruptiveness in school tended to increase if adolescents had stable friendships with peers who exhibited the same problems. While far from being conclusive or exhaustive, these studies suggest that, in addition to peer-group acceptance, the features of children's friendships (support, companionship, stability, etc.) are potential antecedents of school adjustment across a wide range of ages.

Peer Victimization

The probability that children will encounter peer abuse, or become the targets of bullying or other forms of peer

harassment, increases as they enter school and progress through the primary grades, and evidence indicates that victimized children develop a variety of school adjustment problems (see Ladd, 2005). It has been posited that frequent harassment leads children to become so preoccupied with fears, feelings of social alienation, and safety concerns that they have difficulty attending to school tasks and, eventually, develop negative school attitudes or higher levels of school avoidance.

During the early school years, children who are exposed to higher levels of peer victimization display increases in loneliness and school avoidance (Ladd *et al.*, 1997), and these difficulties tend to become more pronounced if children are chronically maltreated. Kochenderfer-Ladd and Wardrop (2001) found that children who were exposed to victimization over longer intervals between kindergarten and third grade were more likely to feel lonely in school and less satisfied with their classroom peer relationships. Children who were victimized during the early grades but not thereafter did not always recover, or show improvements in their adjustment. These longitudinal findings have been corroborated by cross-sectional evidence gathered with diverse age groups around the world (see Ladd, 2005). Data gathered in many different cultures suggest that victims of peer maltreatment are more likely than nonvictims to report negative feelings and attitudes toward school and classroom tasks (Ladd, 2005; Ladd *et al.*, 1997). Although further investigation is needed, especially across age groups, gender and school contexts, the bulk of extant evidence conforms to the hypothesis that victimization contributes to a number of school-related difficulties.

Teacher-Child Relationships

It has been argued that close, rather than conflictual or dependent, teacher-child relationships benefit children and support their progress in school (see Birch and Ladd, 1998; Hamre and Pianta, 2001). Evidence gathered thus far shows that, among kindergarten children who were at risk for retention, those who had positive teacher-child relationships were more likely to be promoted than were those with negative teacher-child relationships (Pianta and Steinberg, 1992). Similarly, in a longitudinal study, Birch and Ladd (1998) found that kindergartners with conflictual or dependent teacher-child relationships were more likely to develop later adjustment problems, such as delayed academic performance, lower classroom participation, and negative school attitudes. Ladd *et al.* (1999) also found that qualities of the teacher-child relationship predicted later classroom participation and, indirectly, academic achievement. While these findings have yet to be replicated with older samples and varying demographic groups, available evidence implicates the teacher-child relationship as a potential antecedent of children's school adjustment.

Contributions of Multiple Classroom Relationships in Children's School Adjustment

In recent years, research on individual classroom relationships has been supplemented by studies in which investigators gather data on multiple relationships, and examine the relative (differential) contributions of these ties to children's school adjustment. Initial efforts to investigate differential relationship contributions were focused on friendship and peer acceptance (e.g., see Parker and Asher, 1993).

Studies of grade-school children suggest that classroom friendships and peer-group acceptance make distinct contributions to the prediction of socioemotional adjustment and academic competence (Parker and Asher, 1993). With young children, Ladd (1990) found that friendship and peer acceptance uniquely predicted changes in kindergartner's school perceptions, avoidance, and performance. In another study (Ladd *et al.*, 1997), the contributions of several types of peer relationships were examined after adjusting for shared predictive linkages, and some relationships were found to be better predictors of children's school adjustment than others. Peer victimization, for example, predicted gains in children's loneliness above and beyond associations that were attributable to friendship and peer-group acceptance. In contrast, peer-group acceptance uniquely predicted improvements in children's achievement. Overall, these findings were consistent with the view that peer relationships are both specialized in the types of resources or constraints they create for children, and also diverse in the sense that some resources may be found in more than one form of relationship.

Are Children's Classroom Behaviors and Relationships Distinct or Interdependent Precursors of School Adjustment?

With the advent of child and environment theories (see Ladd, 2003), researchers began to investigate multiple antecedents of adaptation and, in particular, the interface between children's classroom behavior and relationships as predictors of their school adjustment. Although studies of this type are still few in number, extant evidence tends to corroborate the view that children's behavioral propensities combine with their involvement in specific types of classroom relationships (and relationship experiences) to predict school adjustment (see Ladd, 2003). In two prospective longitudinal studies, Ladd *et al.* (1999) found significant, direct paths from children's behavior to their classroom relationships, and from these relationships to their participation in classroom activities, even after controlling for entry factors that are known to predict school engagement (e.g., family backgrounds, ethnicity, child's gender, intelligence quotient (IQ)). The strongest of these paths indicated that aggressive behaviors anteceded the formation of negative classroom relationships (e.g., peer rejection and

teacher-child conflict) and, in turn, these negative classroom relationships functioned as an impediment to children's engagement in classroom social and scholastic activities. In addition, consistent with past research on the antecedents of scholastic progress, direct, positive pathways were found from classroom participation to achievement.

In another longitudinal study, Ladd and Burgess (2001) sought to determine whether aggressive children's participation in different types of classroom relationships might increase (e.g., exacerbate) or decrease (i.e., compensate for) their probability of developing psychological and school adjustment problems. Results implied that aggressive children's school adjustment difficulties became more or less serious depending on whether they were accepted or rejected by their classmates. On the one hand, peer-group rejection was associated with increases in aggressive children's thought problems and decreases in their classroom participation, positive school attitudes, and achievement. On the other hand, peer-group acceptance was associated with relative declines in aggressive children's attention problems and misconduct, and relative gains in cooperative participation and school liking.

In addition, researchers have examined whether children's school adjustment varies as a function of the persistence of their behavior patterns and the stability of their participation in classroom relationships. Ladd and Burgess (2001) assessed the duration of children's risk status for aggression and stressful peer relationships as they progressed through the first 2 years of grade school. Compared to early-onset indicators, the chronicity of children's aggressive risk status across grades predicted changes in a host of school adjustment criteria, including increases in attention problems, thought problems, and behavioral misconduct, and decreases in cooperative classroom participation and academic achievement. After controlling for initial peer-group rejection and the chronicity of children's aggressive risk status and other relational risks, the chronicity of peer-group rejection also predicted many of the same forms of school maladjustment that were associated with aggression. These findings corroborated the inference that the predictive contributions of aggressive behavior to children's school adjustment are exacerbated by chronic relational risks.

Taken together, these findings strengthen the credibility of models in which it is assumed that both behavioral risks and classroom relational experiences affect emerging patterns of school adjustment. In addition to children's actions in the classroom, the relationships they form in this context appear to have an important bearing on their school adjustment.

Conclusions and Future Directions

During the school years, it appears that a number of connections develop among children's classroom behavior,

relationships, and school adjustment. Several are worthy of comment, and warrant further investigation.

Behavioral Precursors of School Adjustment

Available evidence suggests that the behaviors children utilize to address classroom challenges may elicit specific environmental reactions that make it more or less likely that they will learn, adjust, and progress in this context. Pertinent to this inference are findings indicating that children's propensities to withdraw versus participate socially in classrooms, or engage in prosocial versus aggressive behaviors, may impact the level and form of their involvement in classroom relationships and activities and, thus, contribute to their school adjustment.

Children who withdraw from classroom interactions appear to restrict their opportunities to participate in social and scholastic activities, and isolate themselves from resources that can be found in classroom relationships (support, affirmation, aid, etc.). Among withdrawn children, those who have been identified as also being depressed, aggressive, or anxious, appear to be at greatest risk for subsequent school maladjustment. Aggressive-withdrawn kindergartners, in particular, tend to develop social difficulties with classmates and teachers, and experience a variety of school adjustment problems as they progress through school.

Children who frequently engage in aggressive behaviors appear to elicit reactions from peers (e.g., ignoring and exclusion) and teachers (e.g., conflictual interactions) that reduce their constructive participation in classroom activities. Such environmental restrictions may adversely affect learning and achievement, and promote the development of negative attitudes toward school, classroom activities, peers, and teachers. Whereas children with prosocial behavioral styles exhibit positive social and scholastic outcomes during kindergarten and thereafter (e.g., supportive peer and teacher-child relationships and greater engagement in classroom activities), those with aggressive styles are more likely to develop incipient and persistent forms of school maladjustment (e.g., loneliness, peer rejection, teacher-child conflict, and classroom misconduct).

Relational Precursors of School Adjustment

As we have seen, the adaptive significance of children's peer and teacher relationships was also investigated independently and conjointly with children's classroom behavior, and this corpus of evidence implied that classroom relationships have an important bearing on several aspects of school adjustment. Both peer and teacher-child relationships appear to be important in this regard.

Evidence indicates that classroom peer relationships are specialized in the types of resources or constraints they create for children. For example, in contrast to classroom

friendships or peer-group acceptance, peer victimization appears to be a stronger influence on the development of loneliness and school avoidance. Peer-group acceptance, by comparison, appears to have greater sway over children's participation in classroom activities and subsequent achievement.

It also appears that the contributions of peer relationships to children's adjustment depend not only on the functional properties of particular peer relationships (e.g., the resources or constraints they confer upon children), but also on the duration of children's participation in these relationships (i.e., their history of exposure to specific relationship processes). Extant findings indicate that children's risk for maladjustment is increased by longer exposures to relational adversities and decreased by stable relational supports.

Conclusions and Future Directions

Available evidence suggests that both children's behavior toward classmates and teachers, and the relationships they form with these persons, play an important role in establishing the social, intellectual, and psychological conditions that underlie school adjustment and scholastic progress. Ultimately, it is the combination of these processes that appears to be most prognostic of children's school adjustment. Much remains to be learned, however, about the role of children's classroom interpersonal behavior and relationships as precursors of school adaptation and adjustment. Given the complexity of these phenomena, there is a need to construct models that will focus the search for interpersonal antecedents, and provide a context for understanding how these factors impact children's school adjustment. It will also be important to consider not only how specific interpersonal factors exert an influence on adjustment, but also which aspects of children's school adjustment are affected by these factors.

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Seeking Help as an Adaptive Response to Learning Difficulties: Person, Situation, and Developmental Influences

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Glossary

Adaptive help seeking – Help seeking which is self-regulative, strategic, and ‘smart’.

Autonomous help seeking – See also adaptive help seeking.

Excessive help seeking – See also expedient help seeking.

Executive help seeking – See also expedient help seeking.

Expedient help seeking – Help seeking which is effort-avoidant and unnecessary.

Instrumental help seeking – See also adaptive help seeking.

Mastery-oriented students – Students motivated by a desire to learn, understand, and master difficult tasks.

Performance-avoid goals – Desire to avoid an appearance of incompetences.

Social affiliation goals – Desire for friendship and intimacy.

Social status goals – Desire for peer approval and popularity.

This characterization of help seeking challenges the belief that it should be discouraged out of concern that it perpetuates dependency. Continued dependence on others could be a consequence of less adaptive help seeking (also referred to as expedient, excessive, or executive), which is effort-avoidant and unnecessary (Nelson-Le Gall, 1981, 1987). More adaptive help seeking (also referred to as instrumental, strategic, or autonomous; Butler, 1998; Karabenick, 1998; Nelson-Le Gall, 1981; Newman, 2000), however, can have just the opposite effect by increasing students’ capacity to surmount learning difficulties when encountered subsequently. Just as seeking help that is work avoidant or excessive may not be in students’ long-term best interests, avoiding seeking help when that help is truly necessary also can be nonadaptive (see Marchand and Skinner, 2007; Newman, 2007). The distinction between more and less adaptive forms (or goals) of help seeking must be considered as we examine the person characteristics and features of the learning context that influence its effective use.

Toward that end, we begin with a normative, or ideal, description of learners who employ adaptive help seeking. Such learners carefully monitor how they are doing academically, are attuned to difficulties they cannot overcome independently, and have the skills, motivation, and emotions to address those difficulties by approaching a potential helper and requesting what is needed. Resources required for adaptive help seeking include: (1) cognitive competencies (e.g., knowing when help is necessary and knowing how to formulate linguistically a specific question that yields exactly what is needed); (2) social competencies (e.g., knowing which instructors and classmates are more knowledgeable and can potentially help them and communication skills, such as how and when to approach helpers and how and when to thank them); (3) affective–motivational resources (e.g., academic and social goals, self-beliefs, and emotions that allow the student to tolerate difficulty and uncertainty and the ego strength required to withstand possibly negative perceptions in the eyes of classmates); and (4) contextual and interpersonal resources (i.e., classroom and home affordances such as teachers’ goals, grading system, collaborative activities, rules of student–teacher engagement, and teachers’ and parents’ expectations for the student) that support students’ cognitive and social competencies and affective–motivational resources.

Help Seeking and Learning: An Evolving Perspective

Students experience and deal with difficult academic tasks in diverse ways. Some exert little effort, sit passively, and give up prematurely, whereas others respond to failure with extra resolve and resourcefulness. One manifestation of such resolve involves seeking help. Indeed, recent research and theoretical advances indicate that help seeking can be an important form of behavioral self-regulation (Pintrich and Zusho, 2002), part of the tool kit of cognitively, behaviorally, and emotionally engaged learners (e.g., Butler, 1998; Karabenick, 2003, 2004; Karabenick and Knapp, 1991; Karabenick and Newman, 2006; Nelson-Le Gall and Resnick, 1998; Newman, 2000; Skinner and Zimmer-Gembeck, 2007; Zimmerman and Martinez-Pons, 1990; Zusho *et al.*, 2007). Seeking help may contribute to a general pattern of student resilience in overcoming obstacles to learning and achievement (see Newman, 2000, 2002).

Person and Contextual Influences

As in other areas of self-regulation, help seeking has been extensively studied within the framework of achievement goal theory, which differentiates between mastery-focused and performance-focused approaches to learning (Arbreyton, 1998; Butler, 1998; Butler and Neuman, 1995; Karabenick, 2003, 2004; Newman, 2002; Pintrich, 2000; Ryan *et al.*, 1997; Ryan and Pintrich, 1997, 1998). At the individual level, studies have consistently shown that instrumental/adaptive help seeking is more likely among mastery-oriented students, who tend to construe seeking help within the broader goal of understanding and self-improvement (i.e., developing competence). Theirs is a learning orientation, which lends itself either to seeking help adaptively, or to working independently when that would be more effective (Butler, 1998). Adaptive help seeking is less likely, however, for students who are concerned about appearing incompetent (i.e., a performance-avoid orientation). If such students do seek help, it is often in the form of expedient or executive help seeking (e.g., Karabenick, 2004; Karabenick *et al.*, 2005).

Students' achievement goals at any point in time are a function both of past experiences and features of the contemporaneous learning context. Achievement goal structure refers to how students construe their classrooms and courses of study in terms of the contextual emphasis on mastery and/or performance goals (Ames and Archer, 1988; Midgley, 2002). Studies using hierarchical modeling consistently have found that students' perceptions of their classes' achievement goal structure influence their tendencies to seek or to avoid seeking help when needed (Church *et al.*, 2001; Midgley, 2002; Urdan *et al.*, 2002). Elementary school classes that students collectively judge as more focused on mastery are less likely to avoid seeking needed help (Turner *et al.*, 2002). Although young children are concerned about not appearing incompetent by asking for help, not until middle school do such concerns influence whether they will ask (Newman, 2000). Presumably a consequence of increased evaluation pressures that begin with the transition to middle school (Eccles and Midgley, 1989; Ryan and Pintrich, 1997, 1998), performance goal-related classroom characteristics, in addition to perceived classroom mastery goals, affect middle school students' tendencies to seek or to avoid seeking help (Karabenick *et al.*, 2005; Newman, 2002; Ryan *et al.*, 1998). By the time students are in college, available evidence suggests that classroom mastery goals are not as relevant to help seeking; rather, students in classes they perceive to be focused on avoiding demonstrations of incompetence (performance-avoid goals) are less likely to seek needed help, or they seek expedient help (Karabenick, 2004).

Cultural Influences

Culture can influence whether and in what situations students seek help, in particular, the degree of stress on individualism versus collectivism (Triandis, 1994). Learners in the US especially are socialized to idealize individualism and deplore dependency (Fischer and Torney, 1976; Sears *et al.*, 1957), which adds to the threat posed by help seeking. Individualistic values were codified in early theories of achievement motivation in which seeking help was considered incompatible with an achievement motive (Beller, 1957; Winterbottom, 1958). Learners in collectivist societies presumably are not as subject to the same prohibitions and should accordingly be less reluctant to seek help. This prediction was verified in that Israeli students raised collectively on kibbutzim were more likely to seek help than those socialized in individualistic-oriented cities (Nadler, 1998). Such cultural influences extend to learning and performance in the workplace as well, as evidence indicates that collectivistic (vs. individualistic) norms facilitate help seeking due to the perceived safety that results from collectivist organizational norms (Sandoval and Lee, 2006).

When examining the effects of culture on help seeking, however, it is important to avoid essentialist generalizations. This means taking into consideration characteristics of tasks, specific learning contexts, and whether the help is sought in public (as in classrooms) or privately (after class or in faculty offices) (Karabenick and Knapp, 1988a). For example, the cultural differences found by Nadler depended on whether students worked on tasks individually or in groups. Japanese college students' collectivistic acculturation, which stresses cooperation, dependency, and empathy, does facilitate seeking assistance from peers outside of the classroom. However, due to culturally induced deference to authority in the form of relationships with instructors, students are hesitant to ask their instructors questions in class (Shwalb and Sukemune, 1998). The same deference to authority occurs in other collectivist societies such as Malaysia (Hashim *et al.*, 2003). Situation influences have also been demonstrated among US and Australian college students whose intentions to seek help from peers decreased as the cultural difference between them and their peers increased (Volet and Karabenick, 2006). The more students were culturally unlike other students, the less likely they would approach them for needed assistance with their studies. The effect of cultural difference between those in need of assistance and help providers was moderated, however, by students' perceived support from their teachers for intergroup acceptance: cultural differences were minimized to the extent their teachers supported intercultural interactions among students in their classes.

Fostering Adaptive Help Seeking in the Classroom

Teacher Influences

Help seeking in the classroom is a social transaction (Newman, 1998a). Teachers establish – and students internalize – patterns of discourse in the classroom. Teachers who respond to requests for help with hints and contingent instruction (vs. direct and controlling answers) are likely to have students who not only accomplish difficult tasks but, in addition, learn that questioning is an invaluable academic strategy. In contrast, teachers who take on the role of expert (e.g., who present to the class an explanation without discussion and then expect students simply to practice) are likely to support overly dependent executive/expedient help seeking. When teachers personally demonstrate that uncertainty can be tolerated – and perhaps even transformed into intellectual challenge – students are likely to realize it is normal not to be able to solve all problems independently (McCaslin and Good, 1996). It is expected that, when teachers scaffold learning experiences and socialize the normalcy of academic difficulty, need for collaboration, and expectation of answers to their questions, students internalize a personal sense of empowerment and voice (Nelson-Le Gall and Resnick, 1998).

Ideally, students learn the value, usefulness, and skills of questioning that are important for monitoring, diagnosing, and fixing misconceptions. The frequency with which teachers call on students, the amount of time they wait for a response, and the amount and type of praise they give vary from student to student (Eccles and Wigfield, 1985). Teacher feedback helps students know when they need help. Giving no more assistance than is necessary may help students learn the difference between adaptive and nonadaptive (i.e., expedient) help seeking. Encouraging students to go back to an incorrect problem and try to re-solve it may convince them of the importance in determining if they need further assistance. Further, it may be instrumental in students' coming to appreciate the function of questioning and help seeking in the ongoing process of self-monitoring and learning.

As noted above, when both classroom and personal goals emphasize learning and developing competence, students are especially likely to seek help adaptively, whereas when both types of goals emphasize performance, students are reluctant to do so. When students who are concerned about grades and looking smart are placed in a learning-goal classroom, they may tend to overcome – and compensate for – their personal tendencies to avoid help. Thus, by being attuned to individual students' personal goals, teachers can assist those who otherwise might give up in the face of adversity (Newman, 1998b). Teachers can also try to accommodate students' social goals

(e.g., social affiliation, social status) that influence help seeking (Ryan *et al.*, 1997). The task of goal-coordinator is not easy, as multiple personal (i.e., both achievement-related and social) goals and multiple classroom goals can complement or conflict with one another. Things become even more complex when one considers that responsive teachers try to support student autonomy while at the same time satisfying their own personal (i.e., both achievement-related and social) goals and need for autonomy within the constraints of public school settings (Butler, 2006). In classrooms in which teachers share with children their time, energy, and nurturance, students tend to be attentive, effortful, self-expressive, and interested in learning.

Teachers who are interpersonally involved with students and attuned to the student's purpose typically establish classrooms that facilitate adaptive help seeking. When teachers and students are on the same page, teachers are especially able to take the student's perspective and understand his or her thinking (e.g., regarding a particular academic task) and, based on this understanding, appropriately guide the student's learning. Teachers who are perceived as friendly and caring tend to demonstrate democratic interaction styles, with lines of communication open to students; they listen, ask questions, inquire if students need help, make sure students understand difficult material, and provide help in a nonthreatening way (Wentzel, 1997). When they experience this type of communication, students learn that teachers are trustworthy helpers. Low achievers, who often have poor self-perceptions of ability and low self-esteem, typically are reluctant to seek academic help in class (Karabenick and Knapp, 1988b, 1991). For these students, especially, teachers who believe their responsibility is to attend to students' academic as well as social and emotional needs can counter student disengagement (Ryan *et al.*, 1998).

Teacher involvement forms the basis of students' beliefs and feelings about the benefits – and costs – of help seeking. Early-elementary-aged students generally feel comfortable approaching their teacher for assistance because of global, affective traits of the teacher (e.g., niceness and kindness). By the middle of elementary school, students tend to view teachers as helpful when they show an awareness of their problems and give them advice, time, energy, and encouragement to ask questions in class (Newman and Schwager, 1993). In classes where teachers are perceived as supporting collaboration, student questioning, teacher fairness, respect, and caring, middle and high school students are especially likely to seek adaptive help and not avoid seeking help (Karabenick *et al.*, 2005). Their approaches to teaching, in terms of their own achievement goals, can also influence how supportive they are perceived by students (Butler, 2007). Perceived support for student questioning facilitates help seeking, in particular, at the

college level (Karabenick and Sharma, 1994). However, as early as grade 2, students often are fearful of teachers' negative reactions (e.g., I think she might think I'm dumb if I ask for help) if they ask for help (Newman and Goldin, 1990). Perceived costs are heightened when teachers are unwilling to help (e.g., if you had paid attention, you wouldn't need to ask that question). Children weight the relative benefits and costs of help seeking, with the integration process becoming increasingly complex over the school years, whereas older students increasingly struggle in deciding what to do when they need academic assistance (Newman, 1990).

The Influence of Peers: Social Relations and Comparison Processes

Generally, classroom goals and task structure determine how students influence one another's competence and self-perceptions of competence required for adaptive help seeking. In some learning contexts, students are allowed to collaborate – asking and answering one another's questions – but in other contexts, they are not. In contrast to individual classroom activity (where teachers usually expect students not to need assistance) and whole-class activity (where questions generally flow in the direction of teacher-to-student rather than student-to-teacher), small-group activity generally reduces social comparison and promotes peer collaboration. During small-group collaboration, children can turn to one another when they need assistance.

With experience working together, children gradually become better at asking each other good questions in good ways. Adaptive help seeking requires that students skillfully request help from one another, for example, checking to see if the potential helper is paying attention to them before actually making a request. Ideally, students make requests that are direct, sincere, polite, and clear about what exactly is being requested (Cooper *et al.*, 1982). Requests are often revised and clarified if they are initially unsuccessful in obtaining a response. When students make vague requests but persist by reformulating and clarifying the requests, academic performance tends to improve. Also, when they ask for – and receive – elaborated help (e.g., explanations rather than direct answers) and when they then use the help in a constructive way, children are most likely to learn (Webb and Palincsar, 1996).

Especially at upper-elementary and middle school, collaborative activity provides students a chance to think in public and exchange with one another their thoughts. Built into many collaborative activities are opportunities for students to ask – and be asked – questions for purposes of monitoring their own and others' understanding and for requesting clarification, justification, and elaboration of other students' ideas. Questions potentially allow an exchange of perspectives among individuals who are

working on relatively equal footing. As students observe the effectiveness of peers' questions in resolving difficulties, they are likely to learn that different individuals contribute unique skills and knowledge. They may learn how, in the future, to choose helpers according to both their own needs and others' competencies (Webb *et al.*, 2006).

Although social comparison can be detrimental if that process facilitates performance-avoid goals, comparing one's performance with that of others can have a positive influence on help seeking. Social comparison offers information about others' strengths and weaknesses and thus helps children evaluate peers' capacity to be effective helpers (Ruble and Frey, 1991). It helps children make realistic judgments about whether they personally have tried enough before turning to others. With development, children are increasingly able to judge when assistance is truly necessary so they can request the right amount of help – not too little and not too much.

Typically there are concomitant changes in how children conceptualize ability; students come to believe that smart children who do not have to try very hard and dumb children who have to work extra hard can get a similar grade on an assignment. Thus, students come to perceive children who need help as not very smart (Nicholls and Miller, 1984). By publicly seeking help, adolescents put their self-worth at risk (Covington, 1992). Social comparison strongly influences one's achievement motivation, for it affects why one works hard, or cheats, or gives up: Is it to satisfy one's personal desire to learn, or to prevent others from seeing a weakness, or to impress classmates and parents (see self-determination theory; Ryan and Deci, 2000). By managing positive and negative aspects of social comparison (e.g., according to grading practices, types of classroom activity, goal structures), classroom teachers can potentially affect the extent to which students influence one another's sense of autonomy needed for adaptive help seeking (Newman, 2000).

Friends, by definition, assist and support one another (Berndt and Keefe, 1996). Quality friendships are characterized by mutual support as well as certain features (e.g., reliability, affection, intimacy, and lack of conflict and rivalry) that tend to mediate efforts to seek help. In close relationships, children are relatively unconcerned about self-disclosure, threat to self-esteem, and indebtedness to those who help them. In a friendly context, children find it easier to manage and negotiate social demands of interactions and focus their shared efforts on learning and problem solving. In contrast, children in conflictual relationships typically are reluctant to disclose difficulties to one another and probably would not expect help to be forthcoming even if they requested it.

Social goals are related to academic help seeking. The more strongly they strive for goals of social affiliation (i.e., desire for friendship and intimacy), the more students value and use help seeking as a strategy for dealing

with academic difficulties (Ryan *et al.*, 1997). These goals however do not guarantee that help seeking is adaptive. Children may appear to work together and request help from one another but really just goof off. Indeed, requests among friends are sometimes socially inappropriate (e.g., shouting questions across the room) and cognitively inappropriate (e.g., requesting unnecessary help). The more strongly students strive for goals of social status (i.e., desire for peer approval and popularity), the more they are embarrassed to ask for help in the classroom (Ryan *et al.*, 1997). At the transition to middle-school, when students typically are concerned about their self-image in addition to the increase in evaluation pressures, social status goals are likely to inhibit help seeking, especially if an individual's self-esteem is easily threatened and his or her peer group does not value academic success. Importantly, however, inhibition is likely to be minimized if the student has a strong sense of self and a peer group that does value learning. Such influences may also play a role when students transition to college. If nothing else, their peers during that time are a convenient and even preferred source of assistance (Knapp and Karabenick, 1988).

The Role of Technology

Help seeking increasingly takes place by other than face-to-face contact. More so than voice, computer-mediated communication (CMC) potentially affords students an unlimited landscape of individuals, virtual communities, information, and intelligent systems as resources (Keefer and Karabenick, 1998). Such availability can dramatically reduce the cost of seeking help both in terms of sheer time and effort but also in creating safe contexts by virtue of increased (or total) anonymity, which reduces the threat to self-worth and increases the likelihood that students will seek help (Karabenick and Knapp, 1988a). The wide availability of resources, however, also increases the potential for seeking help that is expedient and work avoidant and raises significant concerns that technology-assisted help seeking may tend to be less adaptive. Recent work is exploring this issue in students' use of online tutoring systems, which employs comprehensive models of the help-seeking process to provide context sensitive help (Aleven *et al.*, 2003, 2006). One emerging concern is that students tend to game the tutoring system in order to quickly complete online tasks rather than gain greater understanding of the material. It appears that the technology-mediated help-seeking process is subject to the same motivation-related characteristics of contexts in which it is situated (Schofield, 1995). Accordingly, whether learning occurs in a mastery-versus performance-focused instructional setting may be just as important when seeking help using advanced technologies as it is from teachers in the classroom.

Summary

Help seeking is a unique social and behavioral strategy of self-regulated learning that involves a social transaction with teachers, classmates, parents, and resources that may be technologically mediated. Its social dimension renders seeking help more complex than other regulation strategies such as rehearsing, organizing, self-checking, and self-testing, strategies that students can carry out independently. The promotion of strategic help seeking necessitates that teachers and other help providers such as counselors, tutors, or parents understand the distinction between help that is instrumental or adaptive from that undertaken to avoid work (expedient), such as seeking help excessively (Alexitch, 2006; Collins and Sims, 2006).

Teachers and peers play important roles in children becoming self-regulated learners. Adaptive help seeking is facilitated by fostering mastery goals. When teachers stress the intrinsic value of learning in their classrooms rather than just getting good grades (or avoiding bad grades), students tend to ask task-related questions in order to truly understand their work. Knowing how one is doing in relation to classmates can have both positive (e.g., it's normal to need help) and negative (e.g., concern about social status). Teachers can potentially affect processes of social comparison. Sensitive and responsive teachers buffer students from factors (e.g., potential embarrassment) that typically inhibit help seeking. They play an instrumental role in the development of children's personal beliefs about the costs and benefits of help seeking. They can help establish collectivistic (vs. individualistic) classroom norms and facilitate the degree to which peer involvement provides children opportunities to experience social aspects of learning. Teachers need to be aware of how technology, in the form of communications or online tutoring, can facilitate help seeking by reducing costs (time, effort, and embarrassment), but they also need to be aware of the potential for its excessive misuse. Increasingly, learners as well need to develop better adaptive help-seeking strategies, which would be important for teachers and other providers of help to foster as they would other cognitive and metacognitive learning strategies.

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Understanding How Leadership Influences Student Learning

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Introduction

This article describes a selected set of conceptual and methodological issues associated with developing a better understanding of the links between school leadership practices and student learning. We provide a general framework for thinking about these links and unravel some of the key challenges associated with each part of the framework.

A General Framework

Most efforts to understand the relationships between leaders' practices and student learning have assumed that leader effects are primarily indirect (e.g., Silins and Mulford, 2002a; Hallinger and Heck, 1999). Based on this assumption, one of the primary challenges for those trying to understand how leadership exercises its influence on students is to identify the most promising variables mediating and moderating leaders' effects. A second significant challenge is to uncover the nature of the relationships among these variables and between leaders and such variables.

Figure 1 is a framework for helping to understand the links between what leaders do and their influence on student learning. This figure indicates that leadership practices or behaviors have direct effects on potentially a wide range of variables which stand between or mediate the effects of leadership when those effects are determined to be student learning. **Figure 1** also includes a set of moderating variables. These are features of the organizational or wider context in which leaders' work that interact with leadership practices and/or mediating variables. These interactions potentially change the strength or nature of relationships between the leadership practices and mediating variables or the mediating variables and student learning.

Leadership Practices

In an extensive review of research on educational leadership up to 1999, Leithwood and Duke (1999) found evidence of five distinctly different types of leadership models reflected in that literature.

- Instructional leadership focuses on the behaviors of teachers as they engage in activities directly affecting the learning of pupils. The more fully developed models in this category (e.g., Hallinger, 2003) also include attention to broader sets of organizational variables, such as school culture or climate, thought to influence teachers' classroom practices.
- Transformational leadership focuses on the commitments and capacities of organizational members, as well as their willingness to engage in extra effort on behalf of their organizations. While the bulk of the evidence about this approach to leadership has been collected in non-school contexts (e.g., Avolio and Yammarino, 2002), educational researchers have recently begun to redress this imbalance (e.g., Nguni, 2005; Lunenburg, 2004).
- Moral leadership is concerned with the ethics and values of those exercising leadership. Specifically, it aims to clarify the nature of the values used by leaders in their decision making and how conflicts among values are best adjudicated (Begley and Johansson, 2003; Begley and Leonard, 1999). A strand within this approach to leadership specifically aims to promote democratic values and the empowerment of a large proportion of organizational members (e.g., Johansson, 2003; Starratt, 2003).
- Participative leadership shines a spotlight on group decision-making processes. Educational research inquiring about this approach builds on a strong foundation of research in other sectors dating back to seminal studies in the early 1930s (e.g., Mayo, 1933) about increases in organizational effectiveness associated with greater participation of employees in meaningful decisions about their work. The extensive body of research on teacher participation in decision making reasonably can be viewed as part of the body of evidence about this model of leadership (e.g., Conley, 1991). Rapidly growing literatures on both teacher leadership (Harris and Chapman, 2002; York-Barr and Duke, 2004) and distributed leadership (Gronn, 2002; Spillane *et al.*, 2000) are the most recent evolutions of this approach.
- Managerial and strategic leadership encompasses a range of tasks or functions found in the classical management literature (reviewed in Rost, 1991), including tasks such as coordination, planning, monitoring, and the distribution of resources. Educational literature from the United Kingdom reflects a far greater interest in this form of leadership than does the North American literature. Addressed much more extensively in the UK

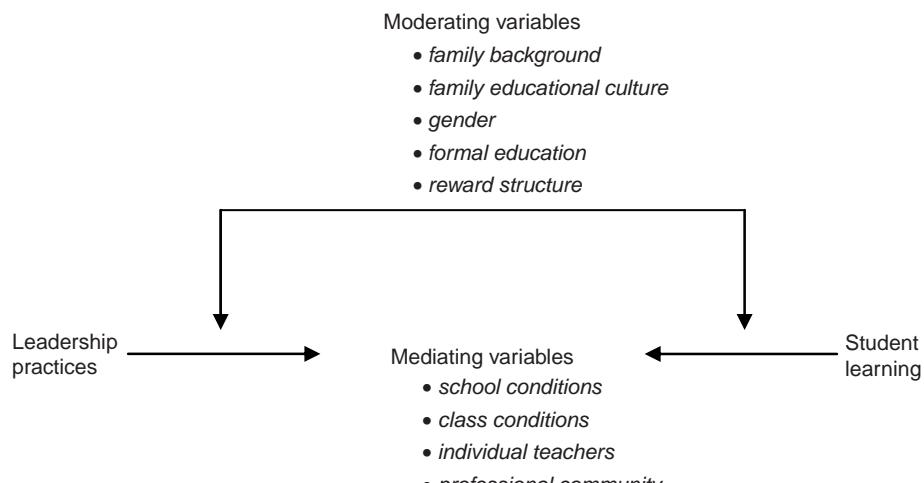


Figure 1 A framework for helping to understand how leadership influences student learning.

than in the North American literature as well is the entrepreneurial, creative, and change-oriented strategic leadership sometimes thought to be the exclusive purview of those occupying senior levels of the organizational hierarchy (Yukl and Lepsinger, 2004) (see, e.g., the special issue of *School Leadership and Management* (2004, vol. 24, no. 1) edited by Brent Davies).

- Contingent leadership emphasizes the need for leaders to be responsive to the unique demands of their organizations and the contexts in which those organizations function. While this approach is quite mature in both education and noneducation sectors (e.g., Blake and Mouton, 1964), its original conception was limited to a very small number of dimensions along which leadership styles could vary in response to context (primarily the initiation of structure and demonstrations of consideration for employees). Current leadership research continues to call for more sensitivity to the context in which leaders work and greater flexibility on the part of leaders across a much larger number of dimensions (Yukl and Lepsinger, 2004).

With the exception of instructional leadership, all of the approaches to leadership explored by the educational research community are also active areas of research in other sectors. However, academic leadership research (term used in reference to systematic, theoretically informed, empirical inquiry about leadership – as distinct from the highly popular genre of leadership literature which is autobiographical, anecdotal, and/or exclusively case based) in these other sectors reflects an additional range of approaches or models. For example, Dansereau *et al.* (1995) identify a total of 13 approaches to leadership nested within four categories they refer to as classical, contemporary, alternative, and new wave approaches.

Some education sector leadership models have been specified in detail and tested with instruments which are quite well developed. This is the case, for example, with

Hallinger's instructional leadership model (see Hallinger and Murphy, 1985), Leithwood's transformational school leadership model (Leithwood and Jantzi, 2000) and Marks and Printy's (2003) synthesis of both of these forms of leadership. Several versions of Bass' (1985) *Multifactor Leadership Questionnaire* have been used extensively to study the transformational leadership effects primarily in nonschool organizations, but in schools and districts, as well (e.g., Nguni, 2005). Many other instruments are available for measuring leadership, especially for doing so in noneducation organizations (Clark and Clark, 1990).

Without diminishing their many other contributions, one limitation of some of the most widely cited reviews of leadership effects on student learning is that they confound estimates of such effects by failing to distinguish among alternative approaches to, or models of, leadership (e.g., Hallinger and Heck, 1996b). Other reviews seem to infer comprehensive assessments of leadership effects while actually limiting themselves to the behaviors associated with a particular model of leadership (e.g., Witzier *et al.*, 2003). Furthermore, some original studies of leadership effects use secondary data sources originally created for other purposes, typically estimating the effects of potentially incoherent or incomplete models of leadership. Virtually all large-scale quantitative leadership effect studies in education restrict their attention to only part of what it is that leaders do.

These shortcomings in the actual measurement of leadership point to the importance of clearly specifying those leadership practices which are hypothesized to affect student outcomes. Failure to do this arises for both practical and conceptual reasons. Practically, available resources will often press researchers and evaluators to rely on existing evidence, evidence that is an imperfect match for their purposes. Conceptually, a major source of the problem is lack of agreement about the nature of leadership, as we discussed earlier.

Student Learning

Students' academic achievement, as it is typically measured, is just one of the several indicators of student learning. Others of a more long-term nature include graduation rates, drop-out rates, and engagement in school, for example. These two sets of outcomes are quite different. Achievement measures reflect pupils' skills and knowledge in a specific curriculum domain. Secondary school graduation rates, however, reflect not only specific curricular goals but also course selection decisions, course load, exam difficulty, and the like.

Achievement test scores are necessarily informed by pupils' entire previous school careers, as well as their personal lives. Indeed, there is a strong case to be made that the important outcomes of education are, in fact, the broader and longer-term measures such as participation in further or higher education, employment, and other measures of social participation. Many people care far more about these kinds of outcomes than they do about, for example, science test scores at age 15. Broader measures tend to present fewer data problems.

Nonetheless, the current preoccupation with student test scores, as the dependent measure of choice in inquiries about leadership effects, is not likely to go away anytime soon. So what are the challenges associated with this measure of student outcomes?

While purpose-built achievement measures could be used by researchers (although they would have their own limitations), in practice, levels of funding as well as government policies mean that most research studies end up using existing measures. These measures are typically part of national, state, or provincial student testing programs with three well-known limitations as estimates of leadership effects.

One of these limitations is the narrow focus of such testing programs. Most large-scale testing programs confine their focus to math and language achievement with occasional forays into science. Technical measurement challenges, lack of resources, and concerns about the amount of time for testing explain this typically narrow focus of large-scale testing programs. But this means that evidence of leaders' effects on student achievement using these sources is evidence of effects on pupils' literacy and numeracy. There is evidence, however, that leadership effects are of a different magnitude for even these two areas of achievement.

A second limitation of many large-scale testing programs is lack of reliability of their results at the school level. Most testing programs are designed to provide reliable results only for large groups of pupils. So as the number of pupils diminishes, as in the case of a single school or even a small district or region, few testing systems claim to even know how reliable are their results (e.g., Wolfe *et al.*, 2004). Researchers would do well to limit

analysis of achievement to data aggregated above the level of the individual school or leader.

Difficulties in estimating change are a third limitation of attempting to use the results of large-scale tests for research designed to assess leadership effects. Monitoring the extent to which a school improves the achievement of its pupils over time is a much better reflection of a school's (and leader's) effectiveness than is its annual mean achievement scores. Technically, however, arriving at a defensible estimate of such change is difficult. Simply attributing the difference between the mean achievement scores of this year's and last year's students on the province's literacy test to changes in a school's (and/or leader's) effectiveness overlooks a host of other possible explanations such as cohort differences, test differences, and differences in testing conditions.

Linn (2003) has demonstrated that these challenges to change scores become less severe as change is traced over 3 or 4 years. The lesson for those attempting to better understand leader effects is to rely on changes in student achievement over relatively long periods of time.

Variables Mediating Leadership Practices and Student Learning

We have already alluded to the commonly held assumption that the effects of leadership on student learning are largely indirect; **Figure 1** is based on this assumption. This is most obviously the case for leadership exercised by those in roles outside the classroom such as principals or head teachers. For the leadership of people in these roles to affect student learning, they must exercise some form of positive influence on the work of other colleagues such as teachers, as well as on the key conditions or characteristics of their organizations that, in turn, have a direct influence on students. These people and conditions are the mediating variables in **Figure 1**. Leaders potentially have a direct relationship or influence on these variables, and these variables, in turn, have a direct influence on student learning.

One recent review of literature summarized an extensive body of empirical evidence collected largely in North America about four categories of mediating variables which can be influenced by school leaders and which have a positive influence on student learning including school conditions (e.g., organizational culture and school structures), classroom conditions (e.g., teaching loads), individual teacher characteristics (e.g., pedagogical content knowledge) and teachers' professional community (Leithwood *et al.*, 2004). Silins and Mulford (2002b), among others, have also provided convincing evidence of the important mediating effects of organizational learning processes.

Variables Moderating Leadership Effects

The direct effects of leadership on mediating variables, as well as the indirect effects of leadership on pupils, are depressed, neutralized, or enhanced by some features of the situation or context in which leadership is exercised. For example, the same leadership practice may have quite different effects on teachers, depending on their gender, age, amount of experience, or levels of stress. So these are potential moderating variables.

Since moderating variables help explain how or why certain effects will hold, careful attention to moderating variables is a key part of understanding leadership effects on students, something that has been badly neglected in educational leadership research to date. Indeed, such inattention to moderating variables is one of the more plausible explanations for contradictory research findings and the general skepticism that often follows about the potential of research to provide clear guidance for policy and practice.

The important influence of moderators also provides an explanation for why an apparently effective leader in one school can become a struggling or ineffective leader when moved to another school. Differences in the new context react negatively to the leaders' habitual ways of doing business.

A final point about moderators concerns the basis on which a variable is assigned moderator status in a research study. The same variable might be defined moderator, mediator (or even dependent) variable status depending entirely on the theory or framework used to guide a leadership effects study. For example, teacher trust is often treated as a moderating variable in leader effects research. On the other hand, trust is also viewed as a dependent measure in leadership studies when researchers are curious about the forms of leader behaviors which promote its development (e.g., Kouzes and Posner, 1995). Trust is also conceived of as a mediating variable in studies concerned with the effects of leader behaviors on employees' acceptance of decisions (Tyler and Degoey, 1996). The theory-driven nature of moderator designation means that the examples of moderating variables provided here should be understood as an illustration of what is of theoretical interest to leadership researchers not as a category of unique variables.

The most frequently used moderating variables in studies of leadership effects on pupils are student and family background characteristics. Indicators of wealth (e.g., student eligibility for free or reduced lunch at schools) and/or socioeconomic status (e.g., parental occupation and minority status) are typically used to represent these variables. However, other moderating variables are evident in recent educational leadership effects research. For example, Leithwood and his colleagues used family educational culture as a moderating variable on the grounds that it is

the feature of student and family backgrounds that most directly influences the learning of pupils (Leithwood and Jantzi, 1999; Leithwood *et al.*, 1999). Marks and Printy (2003) incorporated into their study, as moderators, classroom compositional variables related to student gender and ethnicity.

Other examples of potential moderators can be found in recent reports of research carried out in both education and noneducation sectors. Our own scanning of such reports suggests at least five categories of promising moderators. The first category, pupils, includes a range of features associated with pupils' family background, family educational culture (OECD, 2004), and pupils' gender and ethnicity. The second category, teachers, includes gender, formal education, and tenure (age and experience have been included here). Additionally, part of this category are teacher ethnicity, beliefs and values, morale, trust, and the confidence they have in their leaders, as well as teachers' leadership prototypes. Two characteristics of leaders themselves are evident in the literature at present, leader gender and their level in the organizational hierarchy.

Five features of the organization have been conceptualized as moderators, including school size, what it is people are rewarded for, and opportunities for job enrichment. The difficulty of the tasks people are expected to accomplish, the interpersonal dynamics among people in the organization, and the availability and use of information in decision making are also identified as moderators in this category. Finally, in the category of organizational context, the nature of other stakeholders in the school or district and their relationships with the school, as well as the policy environment in which the organization finds itself, have been reported as moderators of the amount and nature of leaders' influence.

Conclusions

This article has described selected conceptual and methodological challenges associated with better understanding how and to what extent school leadership influences student learning. We offered suggestions about how each of these challenges might be addressed.

Although not discussed earlier in the article, there is an additional challenge which has been largely ignored to date and crosses the challenges we have identified to this point. It is the unit of analysis challenge. Most empirical leadership research in school contexts has treated the school as the unit of analysis. Even though it is rarely awarded serious attention, however, most of this research also has found greater within-than between-school variance in student achievement explained by leaders' influence.

These findings challenge the prevailing view that leaders have relatively uniform effects on the schools, as a

whole. There are two quite plausible explanations for the findings as well.

One explanation is that leaders treat their individual colleagues quite differently, for example, awarding much more discretion to those that they trust than those they do not. This explanation adheres closely to our actual experience in organizations and receives substantial support from a body of research, now well developed outside the education sector called the leader–member exchange theory (e.g., Erdogan and Liden, 2002; Graen and Uhl-Bien, 1998). A second explanation is that a largely common set of behaviors engaged in by leaders is interpreted quite differently by leaders' colleagues. This explanation also aligns closely with our actual life experiences (think of the different accounts provided by multiple witnesses of the same car accident). Furthermore, it has been extensively explored through information-processing approaches to leadership (e.g., Hall and Lord, 1998; Lord and Maher, 1993).

Neither leader–member exchange theory nor information-processing approaches to leadership, however, are reflected in the current corpus of evidence about educational leadership and its effects on students. Research reflecting both of these theoretical lenses would contribute substantially to our further understanding of the complex relationship between school leaders and student learning.

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Competition and Student Performance

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Introduction

Can we improve public schools by promoting competition between them? In 1955, Milton Friedman published an article that questioned the role played by government in the provision of education (Friedman, 1955). Friedman promotes the idea that while government involvement is important, it reduces competition. Without this competition, schools have an incentive to waste resources resulting in the provision of a less than optimal quality of education. The underlying concept is as follows: Assume a single community provides education via a single school. If the government requires that all children under a certain age attend this school and there are no other options for schooling, the school has a group of students that have no choice in schooling. Any choice depends on the willingness of parents to move neighborhoods. If parents are reluctant to move, the school has an incentive to behave like a monopoly resulting in the wasting of resources.

This scenario is more complicated in most school systems. Over the last century, single school districts have consolidated into very large school districts resulting in many schools providing similar levels of education. Historically, these school districts have given schools defined catchments, lessening any competition between schools affiliated with the same district. It is this threat of a potential monopoly that has been the basis of many arguments that encourage more choice in schooling, be it through the subsidization of private schools (e.g., vouchers or tax credits) or through the provision of more choice in public school (e.g., charter schools). What is less clear is whether schools exert monopoly power and, if they do, the extent to which this exertion diminishes school quality.

The purpose of this article is to discuss the key features of the research that has been conducted to understand better the question of whether schools engage in this monopoly behavior and its effect on student achievement. This article focuses on the research that has studied competition within the public school system with some reference to the effects from competition from private schools (e.g., Catholic schools) and/or charter schools. Much has been written on this topic. This article highlights the research that helps to explain why understanding the effects from competition is difficult to measure.

Concepts and Empirical Background

The notion that competition could promote better achievement starts first with a consideration of the choice of schooling by a parent for his/her child. A parent is expected to take into account things such as the quality of the school, the distance from the parent's home to the school, and the teaching philosophy of the school. If a parent can choose from a set of schools, this choice should encourage school administrators to use their resources efficiently to provide a quality level of education. The school administrators, however, must be motivated to react to this potential competition. What motivates the school administrators can be a range of things such as receiving more resources upon meeting some level of performance or having resources tied to the school's enrolment. Card *et al.* (2008) expound on this theoretical framework to illustrate that areas in which parents have choice in schooling should result in better student performance in all schools relative to areas that have less choice in schooling.

To assess whether competition affects school quality, we can study school resources or student outcomes. Competition can impact the allocation of resources to their use by schools. If resources are used more efficiently in areas where schools face greater competition, then we should observe stronger student performance by students in these areas, after controlling for things such as student ability and characteristics of the neighborhood in which the school is located. The basic idea behind the analysis of competition would be to use data to run a regression that looks something like

$$Y = \alpha + \beta C + \gamma Z + \epsilon$$

where Y represents a measure of school resources (e.g., funding per student) or student outcomes (e.g., high-school dropout rate, test scores), C (or competition) is a measure that reflects the degree to which a school or set of schools face competition from other schools, Z is a set of measures to control for factors that could explain variation in the Y measure such as socioeconomic neighborhood characteristics, and ϵ is a residual term to capture other factors that affect the Y measure. This analysis may be done at a student, school, neighborhood, or school district level. Ideally, the analysis is done with data that are measured over time, allowing the researcher to control for both time-varying changes within each level of

analysis (student, neighborhood, or district) and time-invariant characteristics of the area under study.

The purpose of the analysis is to focus on the coefficient β to identify the effect of competition on the decisions taken by the school or school district and/or on student performance. In the ideal study, students are randomly assigned to the school and one can compare the outcomes for areas with greater competitive pressures (e.g., greater school choice) with less competitive pressures. For example, if we were to study the potential effects of school competition on student outcomes, we would want to capture the outcomes of two groups of students. Both groups of students would have similar characteristics in terms of their parental background, socioeconomic characteristics, and their motivation for learning. The groups would differ based on the degree of competition faced by the schools attended by the students. Unfortunately, constructing this type of experiment can be difficult. Because parents can choose where to live and competition might be driven by the presence of a private school, in any study that seeks to study whether competition matters one has to be concerned with parents' house location and/or schooling decision being made in a nonrandom fashion.

Sorting associated with household location is commonly referred to as Tiebout choice based on the work of Tiebout (1956). Under this notion, parents may choose the neighborhoods based on their preferences or tastes for education and other characteristics. If some parents have stronger preferences for education over other parents, this could result in a sorting that is positive or negative. If parents are willing to move to switch schools if a school is not providing a level of service expected by the parent, schools may seek the best use of their resources because they can attract new students and reduce the risk of losing existing students. A more efficient use of resources should result in a higher quality of education and, thus, better student performance. Sorting, however, could have negative effects. If the sorting is based on taste for education, some school districts might end up with students who are less interested in educational pursuits than other districts. The districts with less interested parents may end up with fewer resources which can result in a more limited ability of the school to deliver a quality education. In addition, if students perform differently based on their peers or other spillover effects, the overall effect from promoting competition through Tiebout sorting could result in students underperforming in the areas with students that are less interested in school.

What can be difficult to disentangle is whether observations on variations in school resources are attributable to the sorting/taste for education, due to the constraints a given school or school faces because of a lack of resources,

or associated with being in a more or less competitive environment. Similarly, it is difficult to rely on casual observation to understand whether districts that are spending more resources are doing so because of a sorting issue or because they are inefficiently wasting resources as a result of monopoly power. Barrow and Rouse (2004) study whether school expenditures are valued by potential residents. Their overall finding is that school expenditures are valued by residents and there is no evidence of overspending on education by school districts. They conclude that increased competition across school districts may account for the lack of a finding of overspending by school districts.

This sorting issue can bias the coefficient on a measure of competition. The coefficient can also be biased for other reasons. These reasons include endogenous changes in the measure of competition or the exclusion of measures in the analysis that are correlated with both the competition measure and the outcome measure (omitted variable bias). As discussed below, the competition measure could be endogenous if a change associated with competition is linked to the demand for quality education, for example, if a new school opens in response to an increase interest in schooling. This new school opening would increase the competitive environment. But if the new school opening is in an area where there is an increase interest in education, any observed gains in student outcomes could be attributable to either this change in interest in education or increase in competition. Disentangling the degree to which a change in performance is attributable to a change in competition is difficult. Thus, when estimating the effect of competition on school resources or on student achievement, one should consider carefully whether there are sorting or endogeneity issues or omitted variables in the estimation that could bias the measured effect of competition.

A common method used to address this problem is to identify a set of measures that directly affect the competition measure but not the outcome measure (Y). These measures are then used to predict the portion of the competition measure that can be viewed as exogenous to the outcome measure using an estimation technique known as instrumental variables or two-stage least squares. This allows the researcher to identify an unbiased effect from competition (β) on the outcome (Y). A second method is to use a policy change that affects the competition measure and measure the difference in outcomes before and after the policy change. A third method is to identify stark differences (discontinuities) in the rules that can affect the level of competition and then compare the effects of competition on the outcome around the area of the discontinuity. Examples of these methodologies are provided below.

Competition Associated with the Presence of Private Schools

Hoxby (2000) points out that it is important to understand the role played by Tiebout choice as any type of reform should consider the nature of sorting that occurs across neighbors given that parents are free to choose where to live. One approach taken by researchers is to study the performance of students in public schools relative to the fraction of students in private schools within a school district. The underlying basis for this approach is based on the notion that greater private school presence provides parents with alternatives, encouraging public schools to use their resources efficiently. An early study by Couch *et al.* (1993) and a study by Dee (1998) found a positive correlation on test scores and high-school graduation rates, respectively. Studies, however, by Newmark (1995), Sander (1999), and Geller *et al.* (2006) failed to find significant effects.

Demand for private schools, however, is correlated with the quality of the public schools in the area. If the quality of public schooling is low, parents may opt to send their children to private schools. Yet, only those parents with the financial resources will be able to opt out of the public schooling system. Using measures of the demand for private schools (e.g., private school enrollment) as a proxy for the degree of competition one faces could suffer from a downward bias given the potential endogeneity between demand for private schools and public school quality.

Hoxby (1994) seeks to correct for this potential endogeneity bias by using the share of Catholics in an area as an instrument for private enrollment. If Catholic parents are more likely to send their children to a private school for reasons other than school quality (e.g., to provide their children with an education within a religious environment), then one should expect to observe more private (Catholic) schools in areas where there is a greater share of Catholic residents. Using the share of Catholics in an area, thus, provides a potential source of exogenous variation that can be used to identify the extent to which private schools provide a competitive threat to public schools. Hoxby's analysis suggests a positive effect on test outcomes. More recent studies, however, suggests a weaker and fairly small effects when this type of variation is used to predict the degree of potential competition (e.g., Arum, 1996; Jepsen, 2002, 2003). Altonji *et al.* (2005) also raise into question the use of measures that reflect the share of Catholics as instruments for competition. There are several extensions that use similar empirical methodologies that compare the effect of mechanisms such as vouchers for private schooling, publicly funded charter schools, and a comparison of performance of students in both public and private schools.

Competition Among Public Schools

Another way to explore the potential effects of competition is to study competition between public school districts within a geographic area. Given that parents can choose to where to live, if the size of the district is small enough, a parent potentially can choose to live in one of a number of school districts and these districts will compete with each other for that parent. Borland and Howsen (1992) develop a Herfindahl index of enrolment shares at different school districts to compare the performance of students based on the degree of market concentration of the school districts within a US county. Assume, for example, there are three school districts within a given area. The total enrolment across all districts is summed and shares of total enrollment for each school district is calculated. The Herfindahl index is the sum of the squares of these shares. The index ranges between 0 and 1. A higher index suggests less competition and a lower index suggests greater competition. If each of the three districts had approximately one-third of the students in the area, the index would be approximately 0.33. If, however, one district had 80% of the students in the area and the other two districts had 15% and 5%, respectively, the value of the index would be 0.665.

Borland and Howsen (1992) find that third-grade students perform worse in counties with more concentrated school districts. Millimet and Rangaprasad (2007) extend this research by testing for strategic interactions across the input choices of nearby school districts in Illinois. Their approach assumes that a given district will react to the decisions taken by neighboring school districts if these districts compete for students. They find positive effects from nearby choices on things such as pupil/teacher ratios, spending per pupil, and average school size.

The concentration of districts within a county, however, is also arguably endogenous and could bias results downward to not finding a competitive effect in areas that have more school districts. Hoxby (2000) illustrates the importance of identifying exogenous measures that control for the potential endogeneity associated with the degree of market concentration within a county. Our observation of any given school district represents a combination of decisions made about the district with respect to the level and use of resources and decisions by parents to locate within the geographical boundaries of the school district. For example, an area that has many rivers or mountains will constrain the size of a school district. Hoxby (2000) exploits the natural contours of the land to identify the number of school districts in a given area. She relied on the measures related to the number streams located within a metropolitan area to identify the level of concentration of school boards within the metropolitan area.

At the time the paper was written, Hoxby did not have access to machine readable information about the location of streams. She relied on maps provided from the US Geological Survey's 1/24 000 quadrangle maps. From these maps she developed two measures of streams: a count of the larger streams and a count of the smaller streams. Her results suggest a strong association between the stream measures and the degree of concentration of school districts. Hoxby (2000) represents a creative way to address the endogeneity associated with some US counties having higher levels of market concentration relative to other US counties.

Rothstein (2007) comments on his replication of the Hoxby (2000) results. Rothstein (and subsequently addressed by Hoxby (2007)) identified some coding and software program errors that affected the assignment of students to school districts. Using machine readable data on streams, Rothstein created a set of instruments that differ from Hoxby's instruments but seek to capture the same types of exogenous variation in school district competition. His results fail to find a significant effect from competition on student performance.

Another way to study the potential effects from competition is to focus on the differences in student performance between students with choice and students without choice. Cullen *et al.* (2006) undertake such an approach. Similar to the discussion above, any study that compares different options of choice available to students must use a choice variable that is exogenous. An example of this exogenous variation is the lottery system undertaken by the Chicago public school system to allocate students across different public high schools. Students were eligible to attend a non-neighborhood high school if space was available. Because the space for these schools was limited, the school system assigned interested students based on a lottery. Cullen, Jacob, and Levitt compare various outcomes for the winners and losers of these lotteries. In effect, the winners get to choose to attend their home school or another school within the school district and so have greater choice in schooling than do the losers. Thus, if choice matters, we should expect to observe stronger student outcomes by the winners.

Cullen *et al.* (2006) fail to find much evidence that supports the argument that greater school choice results in stronger student performance. Their results suggest that the argument that competition through more choice results in better student performance may reflect only part of the story on how best to improve the delivery of education. If parents are not well informed about the role that schools can play in promoting better outcomes, this can result in a mismatch between students and the schools they attend. Cullen *et al.* (2006) provide limited support for this hypothesis.

Lessons from Research Using Non-US Data

Most of the current research in the US has focused on understanding the degree to which contiguously situated school boards compete with each other and whether this competition affects resource allocation and/or student performance. (There is also a literature that considers how school quality and changes that affect access to public schools across neighborhoods can affect housing prices. Reback (2005) studies a policy change that allowed students from nearby school catchment areas to attend a school in a different catchment area in Minnesota. He shows that house prices change as a result of this policy change. House prices rose in areas where there was a tendency for students to attend a school in a different catchment area and house prices fell in areas that attracted students from the neighboring catchment areas.) In other countries, however, there are institutional features that can add to our understanding of the potential effects from competition. Relying on Canadian data, Card *et al.* (2008) exploit a feature of the public schooling system that provides choice in schooling to Catholic parents and their children. In Ontario and other provinces, a student of Catholic descent can choose between schools operated by two different types of publicly funded school boards: one operated solely for Catholic students (separate school boards) and one operated for all students (public school boards). Approximately 40% of the Ontario population is Catholic. Thus, for any given area within the province, there are two distinct publicly funded schools from which to choose if one is Catholic. In their paper, the authors first demonstrate that the two systems can be expected to compete with each other. Both systems are publicly funded, with the bulk of their funding being driven by enrolment figures. If there is a shift in enrolment from one system to the other system, the system losing enrolment suffers financially and the system gaining enrolment gains financially. Card *et al.* (2008) demonstrate that if one system opens a new school, the enrolments in neighboring schools affiliated with the opposite system decline. These enrolment shifts are closely linked to the share of Catholics residing in the neighborhood.

Card *et al.* (2008) then explore the effects of these two systems on student performance by studying the performance of grade 6 students in a neighborhood, relative to the performance of the students in the neighborhood 3 years earlier (grade 3 test scores) and relative to the proportion of Catholics in the neighborhood. Their research suggests that students in neighborhoods with a high proportion of Catholics perform better than students in neighborhoods with a low proportion of Catholics. Their results are strongest in neighborhoods that are growing, as measured by the share of new housing in the area.

Gibbons *et al.* (2006) use a set of primary schools in England to study how competition may affect student achievement. They exploit discontinuities in school district boundaries to identify the competition effect. Their study finds limited gains in student performance at schools facing more competition than at schools facing less competition. Burgess *et al.* (2004) study England's choice-based education system to understand better the extent to which students sort across schools and whether this sorting affects student outcomes. After demonstrating that most students have different options for schooling, the authors demonstrate that rules that do not rely on the residential location of students affect the degree to which students are sorted across schools based on their ability.

Lavy (2005) explores a policy change in Tel Aviv to study the effects on student performance. The policy change introduced a program that allowed students to choose schools in and out of their assigned district. Lavy finds the policy affected high-school dropout and graduation rates, especially among disadvantaged children. He, however, fails to find any significant differences in the achievement levels of the students that took advantage of the program.

In 1981, Chile introduced a program that provided vouchers to any student attending a private school. Similarly, in 1992 Sweden introduced a program that provided equivalent public funding to private schools. Both of these programs resulted in a dramatic increase in the number of private schools. Hsieh and Urquiola (2006) study the effects of the Chilean program. They compiled a panel data set that covered 150 municipalities to study the effects of the program on test scores and other student outcomes. The program resulted in a dramatic increase in private school enrolment (~10%). Sandstrom and Bergstrom (2005) study the Swedish reform. This reform dramatically increased the number of private schools (from 90 to 400), although the share of students attending private schools was still small (~4%). Sandstrom and Bergstrom study the effects of the reform on student performance using mostly cross-sectional data from a small sample of Swedish municipalities (33 of 288).

For both studies, the authors had to address issues concerning endogenous location of private schools and the potential of a nonrandom switch by students from public to private schools. They both seek to study the effect of increased private school enrolment on public school performance. In both studies, the authors use as instruments for private school enrolment measures that capture different characteristics of the municipalities in which the schools are located. Hsieh and Urquiola (2005) and Sandstrom and Bergstrom (2005) find, at best, a small positive effect of an increased private school enrolment on public school student performance. Hsieh and Urquiola

(2005) push their analysis further and find evidence of a nonrandom switching by students from public to private school which illustrates the difficulty associated with finding a strong effect from increasing potential competition.

Summary

The research on whether schools compete with each other and how this affects student outcomes and school resources teaches us many things. First, there are many potential ways to measure potential competition. Competition could come from the ownership of schools (private, public), the structure of public schools within a school district (choice in selection of schools or assignment to a neighborhood school), and/or the structure and geographic boundaries of school districts. With each method, however, there are identification issues that could result in a downward bias of the effect of competition on performance and resources. Dealing with these identification issues requires creativity, quality data, and a clear understanding of the statistical issues.

The existing research suggests that there is limited evidence of the effect of competition on either performance or school resources. More recent research, most using data from outside of the US, is demonstrating a modest effect on measures of student performance from competition. There is no evidence at this stage, alas, that schools or school districts waste resources or results in substantially lower student achievement given a monopolistic position.

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Socioemotional Aspects of Technology-Supported Learning

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Glossary

Computer supported collaborative learning (CSCL)

– CSCL is a method of supporting collaborative learning using computers and the internet. The purpose of CSCL is to scaffold or support students in learning together effectively.

Contextual motivation – Motivation is no more a separate variable or a distinct factor, which can be applied in explanation of an individual readiness to act or learn – but reflective of the social and cultural environment.

Self-regulated learning – Self-regulated can be used to describe learning that is guided by metacognition, strategic action, and motivation to learn.

Socioemotional aspects of learning – Study of an interaction of affect and cognition including especially motivation and emotion in social interaction.

cognitive engagement far more than traditional classrooms, these environments also introduce difficulties that may interfere with students' willingness to engage.

Technology-Supported Learning Environments

During the past 20 years, technology has played an important role in many attempts to create powerful learning environments for supporting learning for understanding (De Corte *et al.*, 2003). From the beginning, the effects of the various forms of computer use on students' learning and motivation and social behavior have been a source of debate and a topic of continuing research. In the early years, the interest in research on motivation and social aspects was minor since the main interest was dealing with more cognitive-oriented research – essentially, to what extent working with computers affects what one does and how well one does it. One of the characteristics of that time was to use the power of new technology for the so-called solo-learner model and to find opportunities to individualize the learning process (Collins, 1986; Papert, 1980; Taylor, 1980). During the past 10 years, the situation has changed. Most of the recent research on the use of information and communication technology in education is more or less explicitly considering technology's possibilities for facilitating social interaction between teacher and students, and among students (Dillenbourg *et al.*, 2008; Barab *et al.*, 2004). Many of the current studies focus on computer-supported collaborative learning facilitated by different network-based collaboration tools and a learning theory based on pedagogical ideas (Koschmann *et al.*, 2002; Strijbos *et al.*, 2003). There is also increased ongoing discussion about online learning, virtual interaction, and wireless devices as cognitive and interactive tools in academic learning, as well as about learning at work (Pea and Maldonado, 2006; Renniger and Shumar, 2002).

Influence of Pedagogical Features in Technology-Supported Learning Environments on Motivation

In contrast to traditional school settings, which are usually well prepared, organized, and controlled by the teachers, the goals of self-organized learning and true student responsibility characterize these new technology-supported

pedagogical cultures (Hartley and Bendixen, 2001). The shift from teacher centeredness toward students' activity presupposes strong self-regulative efforts from students and, at the same time, offers more space for the individual's activities (Edelson *et al.*, 1999). This kind of meaningful and close relationship toward the learning tasks also helps students increase their intrinsic motivation and interest (Järvelä *et al.*, 2001). In addition, the often-mentioned increase in authenticity or anchored instruction to real-world problems with technological simulation or multimedia may have motivational implications (Cognition and Technology Group at Vanderbilt, 1996).

One recent pedagogical model applied to technology environments deals with problem- and inquiry-based learning (Brown and Campione, 1996; Edelson *et al.*, 1999). These pedagogical ideas' contributions and motivational implications are quite clear. The process of knowledge-seeking inquiry starts from cognitive or epistemic goals that arise from the learner's cognitive needs and that cannot be achieved by relying on available knowledge. The learner has a close and meaningful cognitive relationship with the learning task, which contributes to the intrinsic quality of motivation (Ames, 1992).

A technology-supported learning environment can also change the nature of social interaction (Bliss *et al.*, 1999). It presupposes collaborative activities, which usually lead toward the sharing of cognitive achievements with other students and members of the learning community (Stahl, 2004). Although there are contradictory findings concerning the success of collaboration in learning (Salomon and Globerson, 1989), some aspects of social interaction carry motivational implications. For example, peers provide models of expertise. Observing the progress of other students may increase confidence in one's own ability to succeed (Bandura, 1997). Furthermore, peer models provide a benchmark for the students' self-evaluations, thereby helping them to set proximal or more accurate goals (Schunk, 2001).

Collaborative learning, with and without technology, includes a variety of shared processes where individuals aim to regulate the prerequisites for learning together, and an increasing amount of studies emphasize the meaning of motivation and emotions for successful collaboration (Crook, 2000). Social learning situations, where the individuals' characteristics, goals, and demands meet, can evoke emotions and create novel motivational challenges for them (Järvelä *et al.*, 2000; Thompson and Fine, 1999). In collaborative learning processes, these socioemotional conflicts can emerge due to a variety of reasons originating from, for example, individual differences, cognitive conflicts, or modes of interaction. For instance, collaborative learning models presume that group members create a shared conception of a task and then try to reach this goal by equally sharing the responsibility of the learning process (Roschelle and Teasley, 1995). This requires constant negotiation and argumentation between the students

as well as adjustment of individual conceptions and goals, especially when the context of learning is not a face-to-face situation, that is, virtual or computer mediated. Often, the same situations are also socioemotionally challenging and can act as competitive motives, interruptions, or obstacles to motivated action in different phases of the learning process (Järvenoja and Järvelä, 2005).

Empirical Findings on Motivation and Emotion in Technology-Supported Learning Environments

Although there is evidence that students respond positively to the technology-supported learning environments designed according to the constructivist learning theory principles (e.g., Hickey *et al.*, 2001; Mistler-Jackson and Songer, 2000), it remains unclear whether students who enthusiastically participate do get cognitively involved. At the moment, there are not enough systematic empirical research and findings about specific motivational components, such as goals, self-beliefs, efficacy, or values; however, there is increasing interest among motivation researchers to extend their analyses to the new learning contexts.

The investigation of the role of goals and goal orientation has been an important recent development in the achievement motivation theory and research on learning and motivation (Pintrich, 2000). Goals are generally defined as perceptions about the purposes of achievement behavior, representing the meaning that individuals assign to achievement situations (Dweck, 1986). The findings indicate that computer-supported inquiry learning seems to foster productive task-related interaction and enhance student motivation in general (Blumenfeld *et al.*, 1991; Hakkarainen *et al.*, 2002). Similar findings on more enduring adaptive tendencies have been reported in other studies of student learning in computer-supported environments, applying socioconstructivist pedagogical models (CTGV, 1992; Hickey *et al.*, 2001). For example, the findings of Hug *et al.* (2005) in project-based science learning show that student interactions with technology scaffolded their engagement. The students in the study by Hug *et al.* learned to ask meaningful questions and discuss the ideas behind these questions. Järvelä and Salovaara (2004) compared students' achievement goals between the computer-supported collaborative learning group and the control group and found statistically significant differences in learning orientations. In the computer-supported collaborative learning group, learning orientation was maintained during the 3 years of the study, whereas in the control group, it decreased. The findings indicate that when students work in computer-supported and inquiry-based environments, they are engaged and work on the task because they have more freedom to choose their tasks and apply individual learning goals and strategies (Veermans and Järvelä, 2004).

Self-regulated learning has been defined as an active, constructive process whereby learners set goals for their learning and then attempt to plan, monitor, regulate, and control their cognition, motivation, behavior, and context (Boekaerts *et al.*, 2000). It is generally acknowledged that technology-supported learning environments are facilitators for the acquisition of self-regulatory skills (Boekaerts, 1999). The issues of openness, choice, and control of learning tasks in technology-supported environments compared to traditional learning environments may especially stress the individual students' volitional processes. Salovaara and Järvelä (2003) have shown that computer-supported collaborative environments enhance strategy use and intentional learning. Students reported deep-level cognitive strategies such as monitoring and creating knowledge representations and more collaborative information sharing compared to control participants. Similar findings were received in the study by Shell *et al.* (2005) where students' working with established computer-supported collaborative classes reported more knowledge-building goals and more question asking than fellow students. Whipp and Chiarelli (2004), in turn, investigated students' self-regulation in a web-based course. They studied how higher education students used and adapted traditional self-regulation strategies to complete tasks and cope with challenges in a web-based online course. According to their results, the students not only used many traditional strategies, but also adapted planning, organization, environmental structuring, help-seeking, monitoring, and self-reflection strategies in ways that were unique to the online technology context.

There are also less-adaptive consequences to technology-supported learning in terms of students' socioemotional interpretations. The responsibility of setting up one's own learning goals and monitoring one's own learning activities in various online learning environments and computer-supported inquiries can also be quite demanding for some students (Veermans and Järvelä, 2004). Earlier research in traditional classroom learning contexts has shown that there are individual differences in students' dispositions toward challenge, with some responding positively and others avoiding taking up difficult work (Meyer *et al.*, 1997). Moreover, there are also within-student individual differences in terms of how a student may respond to a given task across an inquiry unit (Patrick and Middleton, 2002).

In general, academic emotions are significantly related to student motivation, learning strategies, cognitive resources, self-regulation, and academic achievement (Pekrun *et al.*, 2002). Nevertheless, not only do the emotions themselves vary, but also the sources that cause emotions. Learning situations are important sources of emotions that instigate variety of self-referenced, task-related, and social emotions (Meyer and Turner, 2002). Concerning technology-supported learning environments and students' emotional expressions, Järvenoja and Järvelä's (2005) study investigated

what kind of explanations the students give to their emotional experiences related on computer-supported collaborative learning. One of the critical features found was that, especially in the beginning of the learning project, the self-driven emotions played an important role in order to inhibit or facilitate task involvement. Volet and Wosnitza's (2004) study examined the origin, direction, and impact of emotions in social online learning. Their analysis of social online-learning situations revealed a range of other-directed emotions, in addition to self-, task-, and technology-directed ones. Emotions generated in social online environments are not different in nature from those generated in face-to-face learning situations. What is different in social online learning is the fact that emotions are expressed through technology, and that the disclosure of emotions is necessarily voluntary. The results highlight the multiple directions that emotions can take and the significance of students' interpretations of their emotions on the learning process.

Theoretical Approaches to Investigate Motivation in Technology-Supported Learning Context

While the aim of research has been to understand socio-emotional processes in a technology-supported learning environment, there has also been an interest in understanding the learning process by, with, around, and through the computers. The leading questions have been: How does interaction between student motivation and situational features of the technology-supported environment take shape? How do different students cope with the demands of a situation and what is the potential provided by the features of the learning context to their motivational interpretations?

The overall picture of the learners' adaptation to educational environments has increased the researchers' interest in better understanding the interaction between personal and contextual factors in the motivation and achievement of students (Pintrich, 2000). Through the influence of sociocultural and situated cognition theories, it has been recognized that the motivation of individual learners is also influenced by social values and the context in which the learning takes place. Motivation is no longer a separate variable or a distinct factor, which can be applied in explanation of an individual readiness to act or learn – but reflective of the social and cultural environment (Järvelä and Volet, 2004).

The notion of contextual motivation has been widely debated over the last few years (Anderman and Anderman, 2000; Hickey, 1997; Volet and Järvelä, 2001). Conceptualizing motivation in learning contexts builds upon the situated learning paradigm, which views the process of learning as distributed across the learner and the environment in which knowing occurs, and the activity in which the learner is participating (Anderson *et al.*, 2000). This conceptual

framework has provided a useful foundation for understanding students' goals, intentions, and emotions across situations – in real contexts and real time, and the context–person mutual influences have been highlighted in various technology-supported learning environments (Järvelä and Niemivirta, 2001).

Another tendency in research has been to extend the individual analyses of self-regulated learning and motivation to social settings mainly because social and collaborative aspects are emerging features in technology-supported learning models. Although self-regulation research has traditionally focused on the individual perspective (Boekaerts *et al.*, 2000), there is increasing interest in considering the mental activities that are part of self-regulated learning at the social level, with reference to concepts such as social regulation, co-regulation, and shared regulation (McCaslin and Hickey, 2001; Salonen *et al.*, 2005). With regard to the role of the social aspects of learning, these models have examined how the social context plays a role in the generation of cognitions and pursuit of personal goals and, alternatively, how individuals regulate their social context – among other objects of regulation such as cognitions, motivation, and emotions – in order to achieve their goals.

Methodological Challenges

When considering the methodologies for studying the socioemotional aspects of technology-supported learning, challenges remain. The earlier mainstream research on motivation, which acknowledges the impact of context (e.g., research on perceptions of classroom goal structures, see Ames, 1992), explains it on the level of goals, for example, but context is not made operational in real time with real tasks, the here and now of learning. Time perspective is longitudinal or cross-sectional, but not online. Another methodological limitation deals with empirical evidence with social dimensions of motivation.

The value of qualitative methods has lately received recognition in educational psychology, in general (Patrick and Middleton, 2002; Perry, 2002), and in classroom motivation research, in particular (Dowson and McInerney, 2003; Turner and Meyer, 2000), where it has traditionally been neglected more than in general educational psychology. A reason for this recognition is that the educational research had changed progressively from laboratory settings to real-life classrooms. A growing number of researchers have adopted a person-in-context perspective and a multimethod approach to investigate students' situational adaptations in a classroom learning context (Järvelä *et al.*, 2001). In this perspective, motivation is constructed in the interplay between an individual and a context. Usually, this type of research involves the application of qualitative methods, combining qualitative and quantitative approaches, gathering of process-oriented

data, and the use of various units of analysis (Butler, 2002). Recently, new tools have been developed that collect detailed information about students' studying actions by logging the time and context of every learning event (Winne *et al.*, 2006). These traces recorded in a computer program are artifacts of tactics and strategies in a log of fine-grained, temporally identified data that can advance research about how learners engage in learning.

Conclusions

It is known from the research tradition of many centuries that certain motivational processes, such as goals, emotions, and strategies, are the core elements of the learning process. Technology does not question the relevance of these constructs, but calls for us to focus on different perspectives of learning with these theoretical elements. In the future, we should concentrate on finding the critical elements of context that interact with a person – not the technology itself or other contextual features of the environment which, anyway, continuously change.

See also: Cognition and Emotion; Emotion in Educational Contexts; Motivation Regulation.

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Social Networks and the Education of Children and Youth

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Glossary

Centrality – Refers to the number of ties one has to others in a network. Those with more ties may have more access to resources contained within the network.

Closure – Refers to the interconnections members have with one another, that is, the social ties among the network members that are historical and bridging.

Density – Refers to the number and strength of ties among individuals within a social network. In formal network theory, density refers to the number of ties observed divided by the number of total possible ties in a bounded group.

Homogeneity – Being in a group with similar demographic and other characteristics.

Homophily – The concept that friendships tend to form among people who perceive themselves as similar to one another.

Propinquity – A basis of interpersonal attraction characterized by physical or psychological proximity to another.

Social networks – The social ties among a group of individuals, which can involve as small as two “also known as a dyad” or much larger numbers of individuals.

Density generally refers to the number and strength of ties among individuals within a social network. In formal network theory, density refers to the number of ties observed divided by the number of total possible ties in a bounded group. The degree to which multiple network members share reciprocal ties with one another determines the cohesiveness of the network (Wasserman and Faust, 1994). Dense social networks can have positive or negative influences on their members depending on the social context of the network and its goals. In children's social networks where academic performance is valued and children have strong relationships with each other, these values are likely to be transmitted and upheld by the network. However, in situations where networks are dense and the goals are negative, such dense ties can encourage negative behavior patterns. For example, Haynie (2001), examining friendship networks using Add Health data, finds a general association with an adolescent's delinquency and that of his or her friends. Results indicate that network density appears to be a critical component of the delinquency-peer association.

Closure refers to the interconnections members have with one another, that is, the social ties among the network members that are historical and bridging in multiple contexts. In formal network theory, closure refers to how all of an ego's alters (e.g., a student's teacher, parent, and sibling) communicate, thereby closing the circle. Coleman (1990) argues that intergenerational social closure, the reciprocal social ties that connect children with their families, help to create functional communities where educational goals are strengthened and acted upon. Parent social networks that include the parents of their children's friends can build social capital that is reinforced through their children's peer networks, their own adult networks, and the intergenerational family and community networks that the parents and their children share. This point is illustrated by Offer and Schneider (2007), who show in their analysis of data from a study of parents and children in 500 families that adolescents' friendships with peers generate friendships among the parents of their friends, suggesting that information and social resources flow from children to adults as well as from adults to children.

Bridging social networks can be especially beneficial for members in low-resource networks. Distinguishing between weak and strong social ties, Granovetter (1973) finds in his study of job searches how individuals in

The social networks of children and youth are formed in the context of their families, peer groups, schools, and neighborhood communities. Researchers studying social networks of children and adolescents have primarily been interested in the formation of friendship relations and the impact of social location on academic achievement and social development. Social networks are commonly defined as the social ties among a group of individuals, which can involve as small as two – also known as a dyad – or much larger numbers of individuals. Through these social ties, social norms can form which constitute social capital, the resources within social groups that increase the potential for members to achieve their interests and goals (Coleman, 1990). Scholars have identified several characteristics of social capital that have direct implications for the formation and function of social networks. These properties include density, closure, and trustworthiness (Coleman, 1988).

low-resource networks learn about employment opportunities through weak ties outside their immediate social circle. A similar argument has been made by Kim and Schneider (2005) with respect to schools, where they show how immigrant parents who broker and maintain ties to individuals outside their school communities gain access to more resources for their children's education.

Dense social networks with high degrees of closure promote trustworthiness (Coleman, 1988). This concept of trust has been further developed by Bryk and Schneider (2002) in their study of the effectiveness of urban school reform in Chicago elementary schools, where they show that relational trust which is formed through shared expectations and fulfillment of mutual obligations increases the likelihood of school change and higher academic performance. When relational trust is strengthened in social networks among various role sets, including teachers and parents, teachers and students, and parents and administrators, and the academic and social welfare of the students becomes the top priority, such relationships create a more productive learning environment for the entire school community.

The Study of Social Networks

The social networks perspective distinguishes itself from other research approaches through its emphasis on the importance of the relationships between units in a study. In contrast to many non-network research studies, studies of social networks begin with the assumption that individuals and their actions are interdependent, that is, the behaviors and/or actions of one individual influence the behaviors and/or actions of others within a group. Social network analysis also understands the relational ties which exist between individuals within a network to be pathways, which enable the flow of resources among members. From the perspective of individuals within a group, network analyses also endeavor to ascertain how network structure facilitates or constrains individual action in a network (Wasserman and Faust, 1994).

The study of social networks could be understood as focused on two distinct methodologies: (1) formal network analysis and (2) observational network analysis. Formal network methodology employs mathematical models to describe the relationships within a specific, bounded population. To obtain this information, researchers first identify all members of the population of interest and then ask each subject to report on his/her relations with every other member of the group. In this instance, researchers try to obtain information from all members of a fully enumerated social group, which is often called complete network data (Marsden, 1990).

The methods of describing network structure are being modified and tested; now researchers can examine small

and large networks, with ten to hundreds of thousands of nodes sites of network connections (Moody, 2001a; Wasserman and Faust, 1994). Technological advances over the past 50 years have enhanced the development of these models from those that were static to ones that are more fluid. New techniques, such as dynamic network visualization, capture motion and change within networks, allowing researchers to study how networks develop and change through static flip books and/or dynamic movies (Moody *et al.*, 2005). These new methods are designed to visualize relational change beyond more conventional techniques that use one- or two-dimensional pictures with points, lines, and arrows showing directionality.

Egocentric network studies also use formal methodology to focus on how networks operate around individuals. In these studies, subjects typically report affiliations and ties through surveys or structured interviews. Although these data tend to be less comprehensive than that of the complete network in which they are embedded, they are generally useful in studies where the research question concerns how individuals and small groups evaluate their position and affiliations (e.g., centrality – one who has ties to most network members; popularity – more friendship nominations than one would expect based on network composition) in relation to others in the network. Studies of this type generally generate data through peer nominations where subjects are asked to name their three closest friends. These questions have been asked in the major national longitudinal studies conducted by the National Center of Education Statistics (NCES) over the past 40 years beginning with High School and Beyond, followed by the National Educational Longitudinal Study of 1988 (NELS: 88), and, more recently, in the Educational Longitudinal Survey of 2002 (ELS: 2002).

Observation field-based studies provide extensive descriptive information on how members of a group interact with one another in multiple situations, often over time. One of the most recent examples of this type of study was conducted by McFarland (2001) where he used student and teacher surveys, interviews, and school records to examine how social networks contribute to active resistance in 36 classrooms in two Midwestern high schools. Measuring individual and clique-level status, density, and academic standing, McFarland comprehensively describes the characteristics and processes by which student networks create opportunities for student resistance to instructional activities, showing that resistance is related to the structure of student relations and not simply a result of individual responses to teachers' instruction.

Social Networks and Young Children

Friendships among children are generally understood to be significant in determining future developmental outcomes.

The friendships that children form with one another are resources that they can draw upon to cope with the psychological and social stresses of developmental transitions, such as that from childhood to adolescence. In understanding how development is impacted by childhood friendships, Hartup (1996) maintains that it is not enough to know that a child has friends; we should also know something about the identities – including attitudes and behavioral characteristics – of that child's friends, as well as the nature of their relationship. In other words, more comprehensive assessments of children's friendships are needed in order to bring more predictive power to bear on anticipating a child's future disposition and social competence.

Given the salience of friendship networks in the study of child development, it is not surprising that many studies of social networks among children have focused on the formation of peer groups. One of the most frequently cited studies was conducted by Hallinan and Tuma (1978), where they examined the friendship networks of fourth, fifth, and sixth graders over time. Asking children to name their best friends, friends, and nonfriends over time, the researchers measured friendship stability formed through personal relationships and those that were formed through learning-related tasks directed by the teacher. Contrary to expectations, they found that within-classroom student network groupings that were determined by the children's choices, best nominated friends did not emerge as more stable than those friendships that developed through teacher-assigned groups. Their findings suggest that teacher grouping based on classroom tasks strongly affected children's friendship formations.

More recent studies of social networks have also pursued the influence of teacher instructional practices on children's friendship choices. Plank (2000) examined how teachers' task and reward structures influence the academic and social hierarchy in the social networks of Hmong and white students in ten classrooms in five Mid-western elementary schools. Focusing on the effects of social hierarchy on racial and ethnic integration, he found that students from higher social classes tended to be at the center of classroom social networks. Plank suggests that norm-based task and reward structures seem to produce social groups that align across class and racial lines, concluding that the pedagogical style of the teacher directly influences the social network structure of children in the classroom.

Another study by Kubitschek and Hallinan (1998) also focused on teacher activities and friendship patterns. Using social network data, they establish a link between teacher-tracking practices and student friendship choices, demonstrating that these linkages cohere around three bases of interpersonal attraction: propinquity, similarity, and status. They argue that the nature and effects of tracking practices determine friendship choices due to their propensity to encourage intra-track communication

(propinquity), to create greater similarity among students within tracks (similarity), as well as to reflect stratification trends in greater society (status).

Cairns *et al.* (1995) sought to examine the relative stability of friendships and social networks in childhood and adolescence among 131 fourth- and seventh-grade students in two suburban schools over a 3-week period. The researchers used respondent interviews administered at the beginning and end of the observational period to determine social group membership through the social-cognitive map (SCM) procedure. For both children and early adolescents in this study, Cairns *et al.* demonstrate that friendships and social group membership are generally more fluid than has previously been recognized. This fluidity of friendship ties has also been found in adolescent peer and friendship ties, with youth repositioning their social ties throughout the high school experience (Steinberg *et al.*, 1996). However, friendships developed through school-sponsored activities appear to be more stable (Schneider and Stevenson, 1999).

Social Networks and Adolescents

Just as peer interactions play an important role in the development of young children, so also are peer groups influential in adolescent identity development. Adolescence marks the time when young people seek to establish an independent identity from their families and seek acceptance and a sense of belonging through peer groups. As this occurs, similar shifts in the locus of peer relations occur, from dyadic or small-group relationships to peer groups or crowds (Brown and Lohr, 1987). The importance of crowd affiliation on identity development was studied early on by Brown *et al.* (1986). Based on subjective responses of adolescents regarding the importance of crowd affiliation and why it was important, the researchers found that importance of crowd affiliation was negatively associated with age. Thus, younger adolescents tended to value crowd associations, while older adolescents relied on them less heavily, due to the strength of established friendship networks. Furthermore, respondents' sense of identity was not related to the importance they placed on crowd affiliation, but was related to the centrality of their position in the peer network.

Crowd affiliations have also been demonstrated to predict future behaviors, educational attainment, and general psychological adjustment in adolescents. Using widely recognized identity categories such as the jocks, brains, and the princesses, Barber *et al.* (2001) found that jocks and brains had the most positive adjustment in later years, primarily due to their involvement in school-related activities in tenth grade. Future adolescent adjustment was also found by Fuligni *et al.* (2001) to be related to adolescent peer

dependence. The more adolescents reported being willing to sacrifice their talents and school performance for being in a particular group, the poorer was their academic performance and overall adjustment. Taken together, these findings suggest that peer-group orientation plays an influential role in adolescent's identity development.

Due to its relationship to peer groups, identity development in adolescence has been a topic of particular interest to social network researchers. Collecting data on nearly 6000 high school students in California, McFarland and Pals (2005) explore how social networks affect the identity development of adolescents. They found that, while category memberships are highly influential in identity development, the network characteristics of prominence, homogeneity, and bridging lead to higher salience of identity imbalance, which in turn leads to an increased incidence of identity change. Homogeneity, that is, being in a group with similar demographic and other characteristics, exerted the greatest influence on identity change, revealing that, over time, social conformity inhibits identity instability and inconsistency.

The concept that friendships tend to form among people who perceive themselves as similar to one another is termed homophily. These social affiliations tend to be aligned around traits on which people share values (value homophily) or social status (status homophily). McPherson *et al.* (2001), in their review of homophily, argue that the most persistent traits which determine network homogeneity are race and race-like ethnicity.

The tendency toward network homophily and homogeneity is evidenced in several studies. Jackson *et al.* (2006), in their study of 1268 fifth graders' peer and teacher nominations of classroom social network relationships, asked students to rate who is most like them (Like Most), most not like them (Like Least), a leader (Leader), and who is aggressive (Fights). They found that classroom racial composition and the race of the teacher are directly related to the nominations of students into each of these groups. In classes that are majority white, black students are significantly less likely to be nominated by both peers and teachers as a leader, more likely to be categorized as aggressive, and less likely to be nominated in friendship networks. However, they also demonstrate that, as black students are increasingly represented in the classroom, black children's nominations to these categories also improve. Based on these findings, the researchers conclude that white children tend to be more protected in majority black environments – a phenomenon they attribute to their status in the broader social community and to the history of discrimination and bias against blacks.

Examining the substantive integration of friendship networks in varied school contexts, Moody (2001b), using data from the Add Health Study, draws on contact theory to explore the relationship between friendship segregation and school organization and diversity. His findings suggest

a curvilinear relationship between heterogeneity and friendship segregation, finding that once a particular threshold of race salience is reached in the school, integration peaks and then falls. Moody maintains that schools have the greatest effect on racial friendships when they can structure racial mixing through the racial integration of extracurricular activities.

Virtual networks have emerged as sites for establishing socialties, although early studies suggested that ties created through the Internet were weak. Today, adolescents and young adults frequent sites such as MySpace, Facebook, and online dating websites to form new relationships. The relationships formed within these groups may or may not exist additionally outside of virtual space, but they are nonetheless real, to varying degrees. Youth participate in these networks for generally similar purposes as their traditional social groups: to forge new social relationships, find and interact with people who share their interests, and find people to date. Online relationships are now considered a part of the social world of most adolescents. These relationships are becoming increasingly significant to research on social networks not only because they are more prevalent, but also because they refine and reshape understanding of the motivations underlying adolescent friendship formation as well as the possible avenues in which those relationships can be forged. In other words, adolescents who may have traditionally been understood as social isolates, due to their difficulties forming interpersonal relationships with face-to-face friends, now have other outlets for forming relationships which need to be brought to bear for understandings of peer networks in schools.

Previous research into adolescent friendship formation has primarily been analyzed through social needs and social compensation perspectives. The social needs perspective attributes the motivations behind adolescent development to personal needs for intimacy, self-validation, and companionship, whereas the social compensation perspective focuses more on the relationships that adolescents have with their parents to understand motivations behind friendship formation. Research supporting the social compensation approach is exemplified in the findings of Mesch and Talmud (2006). In a survey of a nationally representative sample of adolescent households in Israel (1000 in total), this study examined differences between adolescents who formed online friendships from those who did not, as well as adolescents' perceived strength of social ties in terms of the nature of initial contact (either online or face-to-face). The study found that adolescents reporting conflicts with parents turned to online friendships rather than face-to-face relationships, in part due to the anonymity of online communication. Further, this study's findings challenge previous research of the strength of social ties in online relationships, asserting that it is not technology which affects friendship formation, but rather the social embeddability of the ties.

Social Networks, Educational Expectations, and Academic Performance

Social networks in schools have been demonstrated to significantly affect students' academic performance. Friendship ties with academically oriented peers have been found to produce academic advantages, particularly for youth in low-performing schools, suggesting that youth in a social environment with lower resources can be protected by the social capital generated in their academically oriented peer relationships (Crosnoe *et al.*, 2003). Further, in a study of friendship networks among 929 fifth-through seventh-grade children, Altermatt and Pomerantz (2005) found that respondents' grades were highly predicted by their friends' report card grades for that academic year – a positive educational achievement effect of their social networks. Nesting their findings within social comparison theory, the authors conclude that friendships with high-achieving peers benefit both high achievers and low achievers. They find moderate evidence however that low achievers' self-esteem decreases as result of friendships with peers who outperform them academically.

In several studies, hierarchy and clique development among students within classrooms have been linked to homogeneity of academic achievement and academic track placement. In a longitudinal study of 1477 pre-adolescents from fourth through seventh grade, Hallinan and Smith (1989) found that classrooms with low degrees of academic variance – especially with regard to high-ability students – also tend to have a low incidence of social clique formation. This finding suggests that academic tracking may have negative consequences for student social development, especially among gifted students. However, in classrooms with mixed-ability students in which the teacher stressed the importance of high academic achievement, the researchers found that cliques tended to form around homogeneity of achievement. This particular finding suggests that teachers – especially those with mixed-ability classes – should be mindful of how they organize their classroom with regard to maximizing academic achievement for all students.

Fuligni *et al.* (1995) maintain that the selection of adolescents into academic tracks should be seen as an important environmental change with impacts on their developmental transition from childhood to adulthood. Measuring adolescent's math grouping status over time in sixth, seventh, and tenth grade, they find that middle- and upper-level students benefit in both their math-related self-concept and academic performance; for low-ability-level students however, their self-concept initially increases, but decreases by tenth grade. Thus, low-ability grouped peers emerge with lower self-concepts than their nontracked peers.

Examples of studies which combine academic data with social network data serve as significant contributions to the study of how networks affect academic outcomes in

children and youth. Supplementing academic information in the Add Health study, the Academic Achievement supplement to Add Health (AHA) facilitates the measurement of the effect of social networks on academic achievement, controlling for different family, school, and classroom contexts. Early research using this data has found strong relationships between peer networks and advanced mathematics course taking, a factor that weighs considerably in youth's academic careers (McFarland, 2006). A similar study using this data set also shows that female friendships boost advanced mathematics course taking and counter the traditional drop-off in female adolescent participation in advanced math and sciences (Riegle-Crumb *et al.*, 2006).

Social networks need not involve students to promote student performance. Morgan and Sørensen (1999) argue that intergenerational social closure – in this case, dense network connections between the parents of students – has both the potential for negative as well as positive effects on academic achievement, depending on the resources available within the community. They suggest that horizon-expanding schools and organizations shift the roles of monitoring norms and disseminating expectations away from the network actors and toward professionals and others outside of the primary network. Using parent and student-level data from the National Educational Longitudinal Study of 1988, the authors compare math test score gains in horizon-expanding schools and norm-enforcing schools, finding that horizon-expanding network configurations produce greater academic benefits than do norm-enforcing schools in the public school context.

Furthermore, social trust generated within school institutions has been found to generate greater efficiency and effectiveness in educational interventions, with teachers as members activating capital transferred from administrators, reform experts, and/or other peers. Similar to the concept of functional specificity, Frank *et al.* (2004) find that taxing or diffusing social capital reduces its effectiveness. In other words, the less pressures administrators place on their teachers at one time, the more efficiently they are able to tap available resources in the service of implementing educational innovations of benefit to their students.

Social Networks, Deviant Behaviors, and Health

The influence of peer groups on children and youth's development yields both positive and negative outcomes. Peer networks have been demonstrated to promote prosocial behaviors, such as extracurricular participation and leadership (Brown, 1990; Elder, Jr. and Conger, 2000). However, peer groups can also contribute to negative outcomes for youth, such as increased participation in

antisocial behaviors, often to the detriment of their educational futures. Studies examining the operation of delinquent behavior among adolescent peer groups have found significant network effects – in particular, characteristic differences between antisocial and prosocial peer networks (Giordano *et al.*, 1986). In a study of how the peer networks of aggressive children function to promote bullying and other deviant behaviors, Cairns *et al.* (1988) examined the role of aggressive children within their social networks in school, investigating how network structure relates to antisocial behavior. Using cluster analyses and best-friend nominations, they find that aggressive youth do not differ from control subjects in the degree of social cluster membership – in fact, many are often solid, central members of peer groups. These findings demonstrate that aggressive youth are not more likely than other students to become social isolates, and do have networks of peer support, despite being disliked for their behavior.

The development of increasingly sophisticated socio-metric data has enabled researchers to examine the etiology of peer socialization into behavior norms, such as the process by which socially isolated youth are initialized into gangs and commit crimes against property. In analyzing these particular delinquent behaviors, Kreager (2004), using Add Health data to identify social isolates, found that isolation alone does not predict future delinquency, which replicates the findings of previous studies (see Haynie, 2001). However, when isolation is combined with peer conflict, or otherwise negative peer encounters, significant increases in delinquency and delinquent peer associations were measured.

In a related study, van Lier *et al.* (2005) support the significance of peer rejection as a predictor of deviance in their study of antisocial behavior among French-Canadian and Dutch boys and girls. Using peer nominations to classify antisocial behavior developmentally from childhood to early adolescence, the researchers employ a network analysis and find that peer rejection most greatly correlates with antisocial behavior and occurs more readily in youth involved in high-delinquency behavior patterns. This suggests that the process by which homophily occurs is a consequence of pre-existing preferences rather than a result of the socializing norms of the peer group.

Additionally, health-related behaviors of youth have been closely linked to social network affiliations. Early substance use has been tied to social networks, in particular, adolescent drug use (Kandel, 1978), drinking (Stattin *et al.*, 1989), and cigarette smoking (Alexander *et al.*, 2001). Moreover, early and risky sexual behavior has been linked with peer-group membership (Bearman *et al.*, 2004). Advances in social network theory and design offer increasingly rigorous and nuanced evidence of how children's behavior and educational futures are affected by the social networks in which they are embedded.

See also: Children's Friendship; Early Social Development and Schooling; Peer Interaction and Learning; Peer Learning in the Classroom; Peer Relations and Socialization of Children and Adolescents with Special Needs and Adolescents with Disabilities; Social Development and Schooling.

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Social and Cultural Capital in Education

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Glossary

Cultural capital – A broad theory to explain differences in societies such as class differences.

Formal curriculum – The formally planned and organized set of learnings for students which usually takes the form of the subjects that compose the school curriculum.

Informal curriculum – The nonschool subject learning in schools that includes activities such as participation in meetings, clubs, student governance, and fundraising which are largely unplanned by the school compared with the formal curriculum.

Social capital – This refers to connections among individuals that facilitate collective action and includes trust, norms, and networks of association representing any group which gathers consistently for a common purpose.

Many forms of capital – economic, human, cultural, and social – have been identified by social scientists. These are mostly seen as input measures to explain variations in phenomena in society. For example, differential amounts of capital may explain differences between classes, or why some students perform better at school than others and so forth. This article examines the relationships that social and cultural capital have with education in general and schools in particular. In these contexts education is usually considered as an input variable that affects the level of social and cultural capital. Consequently, increasing levels of education, it could be predicted, should produce higher levels of social and cultural capital. While this is an intriguing possibility this article will concentrate upon the nature of the relationship between social capital and education and particularly on the potential of the school in facilitating the accumulation of social capital by individuals and society.

Social Capital

Social capital is a seductive concept. It offers much, tantalizing researchers and policy makers with a procedural solution to unsolvable problems. As Portes commented "... social capital has evolved into something of a cure-all for the maladies affecting society at home and abroad." (1998, p. 2) Its ability to deliver solutions, however, has

been seriously questioned (Portes, 1998; Baron *et al.*, 2002; Dika and Singh, 2002). In the 1990s social capital burst upon the academic scene driven by the popular work of Robert Putnam and its appeal to major intergovernmental agencies such as the World Bank and the Organization for Economic Cooperation and Development (OECD) as it addressed major issues of civil society, economic development, and poverty (World Bank, 1999; Woolcock, 2001). For the World Bank social capital is a useful organizing concept to explain levels of social cohesion which, in turn, is critical for economic development and sustainability (World Bank, 1999).

It was soon realized, however, that the construct was neither new nor without controversy. Some have traced its roots to even the late nineteenth century, though most researchers attribute the work of Bourdieu (1986) and Coleman (1988) as the meaningful beginnings. While most writers treat social capital as highly positive, it can also have a dark side (Bourdieu, 1986; Print and Coleman, 2003). Interestingly, in recent years social capital has, to a limited extent, consolidated its presence in a diversity of applied areas (such as welfare, urban planning, engineering, health, economics, organizational behavior, sociology, natural resources management) and yet waned academically as it appears to have failed to live up to its high expectations as a research panacea for explaining social phenomena. So what is this construct and why is it seductive?

Defining Social Capital

How one defines social capital depends in large measure which position one takes relative to the three key theorists – Bourdieu, Coleman, and Putnam. From a socialist perspective Bourdieu saw social capital as elitist, helping to explain the process of social reproduction. He envisioned social capital as a critical tool, with an analytical function that would contribute to a deeper understanding of the way different forms of capital interacted. Coleman argued that nonelites could also benefit from acquiring social capital, taking a more nuanced, sociological perspective to the construct. Putnam, however, took a political science perspective and used social capital to help explain political systems, especially democracy and how people might gain from increasing their stock of social capital.

Putnam's view that social capital refers to connections among individuals that facilitate collective action has received wide, though equivocal, support. These resources include trust, norms, and networks of association

representing any group which gathers consistently for a common purpose. In a political sense social capital is often seen as the glue that keeps democracy together. It is essentially about trust, cooperation, and networking. As Putnam argues, social capital enables people to resolve collective problems more easily, facilitates trust and interactions in communities, enhances interconnectedness amongst people, and facilitates the flow of information.

Many researchers have argued that healthy democracies are characterized by high levels of social capital. For example a norm of a society high in social capital is reciprocity, which encourages bargaining, compromise, and pluralistic political outcomes. Another norm is belief in the equality of citizens, which encourages the formation of groups that transcend traditional societal groupings such as class.

In a more pragmatic sense the World Bank (1999) refers to the norms and networks that enable collective action. It encompasses institutions, relationships, and customs that shape the quality and quantity of a society's social interactions. For the World Bank social capital consists of five dimensions – groups and networks; trust and solidarity; collective action and cooperation; social cohesion and inclusion; and information and communication.

A common theme amongst these definitions is that social capital facilitates social functioning. As such it consists of four main components – it resides within groups; it involves civic virtues such as trust, cooperation, and civility; it requires of participants that they be actively engaged; and it is mutually beneficial for members and the group (Print and Coleman, 2003).

However, to suggest that there is unanimity in definition or even conceptualization, let alone whether the construct is meaningful, is far from reality. Contested definitions abound (Portes, 1998; Newton, 1999; Lin, 2001) usually arising from a different perspective or the argument that earlier definitions are incomplete or inadequate.

Types of Social Capital

The literature, and particularly the extensive work of Putnam (1993, 2000), Woolcock (2001), and Field (2003), identifies at least three types of social capital and one could argue for a fourth:

1. Bonding social capital is more exclusive. This includes social networks amongst homogeneous groups of people such as family, friends, and neighbors. Bonding is referred to as dense, tight-knit, homogeneous social networks. For Putnam (2000) the best metaphor was sociological superglue. While envisaged as a positive form of social capital, bonding can also include negative social capital as in the case of criminal gangs.
2. Bridging social capital is more inclusive and includes social networks between socially heterogeneous groups

such as close friendships, workmates, and formal groups. These are more access oriented to enable access to valuable resources and information outside immediate networks. Putnam (2000) saw this as a form of sociological lubricant. This form of social capital is more positive as it builds bridges between different groups and so contributes towards more effective functioning of society, governments, and communities.

3. Linking social capital is where unlike people, in dissimilar situations, join together for mutual advantage (Woolcock, 2001). This refers to vertical associations that provide upward links to more powerful groups, agencies, and people. For example, a community might link with valuable outside members to build a wider pool of resources.
4. These are not discrete forms of social capital and more commonly societies would experience various combinations of the above.

Appeal of Social Capital

Why is social capital so alluring? Why is it sufficiently important to be adopted by intergovernmental agencies such as the World Bank? Social capital has wide appeal in the social sciences, and other disciplines, as a means of explaining differences between individuals and groups. In particular social scientists seek to understand and predict relationships, hopefully causal relationships, between social capital and other aspects of society. For example the following hypotheses suggest the appeal of social capital, especially to policy makers, although many social scientists would be tentative in applying them:

- The greater the social capital, the greater the confidence in government (and other institutions) which enable societies to function more effectively and prosper.
- The greater the social capital, the easier to organize support to resolve collective problems. People will be better able to solve collective problems if they cooperate, trust each other, and build networks together. They may perceive advantages in not cooperating but this is short-sighted. Addressing global warming is an example.
- The greater the social capital, the higher the percentage of problem-solving outside the governmental sector, while less social capital requires greater reliance upon authoritative controls. When people join together they tend to be more tolerant, more empathetic to others' problems, and less cynical, and consequently, require less government persuasion to live harmoniously together.
- The greater the social capital, the more prevalent the norm of reciprocity (bargaining, compromise, pluralism) amongst people. This enables them to resolve problems more effectively.
- Similarly, the more social capital is present in society the higher the priority of the norm of equality. In high

social capital areas public space is friendlier, safer, cleaner, and has less crime.

- The greater the social capital the more it will assist those in disadvantaged areas and will lead to an improvement in the quality of their life and mitigate the insidious effects of socioeconomic disadvantage.
- In general, being involved in groups is beneficial to people and associational life (and its quality) builds social networks, enhances society, strengthens democracy, and can improve health and happiness.

The application of social capital has particular interests in providing explanation for a current phenomenon plaguing western democracies – declining political support and increasing political disengagement. Many social scientists have explored this approach in some depth (Putnam, 1993, 2000; Woolcock, 2001; Print and Coleman, 2003; Jennings and Stoker, 2004), as they search to explain why, particularly in western societies over the past few decades, social ties and political engagement have diminished. As Putnam argues, decline in social capital erodes political participation, interpersonal trust, as well as political trust, all of which have become abundantly evident more so in the United States, Canada, and Britain but also in varying degrees in Western Europe as well.

Education and Social Capital

Putnam (2000) and more recently his associates (Helliwell and Putnam, 2007) contend that education and social capital are closely linked. Education they believe is the best predictor of many forms of social and political engagement. They also note that while education levels have risen dramatically within the United States over the past half century, levels of social and political participation have not risen accordingly and on many measures have declined.

This paradoxical puzzle has concerned political scientists for some time though recent research reinforces the argument that as education levels rise so do key measures of social capital. The conundrum remains, partly because Putnam and others use gross indicators of education such as years of completed schooling and partly because there is little evidence of understanding what happens within schools (Print and Coleman, 2003). Greater insight into the contribution and impact of civics and citizenship education subjects and noncurricula aspects of schools would enable a deeper understanding of how schools may affect social capital development (Print and Coleman, 2003; Print, 2007).

Schools and Social Capital

As social capital can be acquired and expanded, schools could, and arguably should, play an important role in

building social capital especially in terms of affecting citizenship and democracy. For example, Print and Coleman contend that “Schools offer a potentially powerful opportunity for both learning about the elements of social capital and enacting components of social capital through related activities. [including] some form of civics and citizenship education” (2005, p. 129). The contribution of schools can occur through three sources – the formal curriculum, the informal curriculum, and the extra curriculum. The hidden curriculum may also contribute but given its nature it is not considered here.

Formal Curriculum

When Putnam suggests that schools may contribute substantially to building social capital through enhancing trust, networking, and participation, he, and others, are thinking about social capital in relation to the formal curriculum, that is, the subjects that compose the school curriculum (Croniger and Lee, 1991; Dika and Singh, 2002; Print and Coleman, 2003). That is, schools can contribute to social capital through teaching certain subjects (such as civics, citizenship, service learning) which builds knowledge, skills, and values within students. Citizenship education, for example, contributes to knowledge of society and government, building skills of cooperation and networking as well as facilitating values such as trust and civic virtues (Print and Coleman, 2003). In this way teachers facilitate the growth of bridging, bonding, and linking forms of social capital. This of course, assumes that schools and teachers understand social capital, how it works and why they should purposefully facilitate it.

Putnam (2000) also addresses the relationship between social capital and schools from the other direction. He contends that children will have more positive academic and nonacademic outcomes (lower drop-out, higher academic performance, less truancy) if social capital is strong at home and parents engage with schools. Similarly, Croniger and Lee (2001) found that teachers are an important source of social capital for students. Where these teachers help students personally, influencing the quality of the student’s social networking, students are significantly less likely to drop out of school.

A group of Scottish researchers in the Applied Educational Research Scheme are investigating social capital in the context of school outcomes. They are exploring how teachers and schools may utilize social capital to enhance student school outcomes. A current study is investigating how students may build their personal stock of social capital, particularly to use in overcoming backgrounds of disadvantage.

Informal Curriculum

Within the school, social capital may be generated substantially in ways other than through formal curriculum.

The informal curriculum refers to the non-school subject learning in schools that includes activities such as participation in meetings, clubs, student governance, and raising funds for charities (Print and Coleman, 2003). These activities, largely unplanned compared with the formal curriculum, are ways of building social capital for, as these authors argue “It is specifically through the informal curriculum that students may acquire participatory skills and values, as well as knowledge, from engaging in activities such as conducting student councils, running school parliaments, raising funds on special days, interacting with the community through service learning and the like” (2003, p. 134).

Extra curricular activities may also contribute to building social capital through individual and group activities which are beyond the confines of the school curriculum. These activities are conducted outside of school hours and retain only minimal contact with the school, such as debating, charity fundraising and, in many countries, many forms of community service.

Issues in Social Capital

Social capital is far from unproblematic, both as a social science tool and as an explanation of social phenomena. Further theoretical work and empirical research is required to enhance the value of this construct. Meanwhile several issues can be raised about its effectiveness.

In terms of schools, building social capital should be seen as an important, integral task of education. This occurs, though not as much as expected and certainly less than many may like. Many parts of the formal school curriculum are undervalued in this role including school subjects such as civics and citizenship education.

Similarly, the informal school curriculum could play an even more important role in generating social capital within schools. Yet, as Print and Coleman note, this is problematic given the low status of the informal curriculum and “Significant further research is required in this area to gauge the impact of the informal curriculum on student potential to build social capital” (2003, p. 134).

There are also, more generally, potential problems with social capital should the capital component be excessively emphasized. Within social phenomena there are clearly many factors that cannot be economically isolated or expressed in terms of capital. Human behavior does not necessarily follow a logical path, such as the maximization of capital, so that accumulating social capital may not occur even though it might be logical to do so. For example, many people do or will not join associations or social networks, for a variety of reasons, and thereby restrict their bonding and bridging social capital.

Finally, social capital is inevitably treated as a positive asset and is portrayed in a positive light. Yet the acquisition of social capital may also occur amongst gangs and criminal groups or in societies which are fundamentally

divided such as Northern Ireland or the Balkans or in countries dominated by malevolent leadership such as Nazi Germany or the Khmer Rouge in Cambodia. Thus the potential for a dark side of social capital needs further consideration.

Cultural Capital

Cultural capital is a very general theory, somewhat elusive, and employed largely by sociologists to explain culturally generated differences in societies. As a theory, cultural capital recognizes that a multicausal approach is required to understand the complexity of a social phenomenon, thereby making it more valuable as a realistic explanation of society. The concept of cultural capital is perceived as a useful means for researchers to explore phenomena such as how social inequalities are organized in culture-drenched societies. It has been particularly influential in sociology to explain the ways the middle classes distinguish themselves from the working classes through their distinctive cultural tastes, knowledge, and competencies.

For example, cultural capital may be anything in one's personal/social background that contributes to or diminishes one during one's life. It could be something like family background or educational qualifications or wealth/income. These attributes help explain differences between people in a multicausal way. There is, in effect, no limit to what can or cannot be considered cultural capital as it really depends on the context being studied. However, as a theory it has a weakness in that it is frequently difficult to identify the relative influence of particular cultural factors and so explain social phenomena effectively.

Bourdieu (1986) referred to three types of capital in his seminal work – economic, social, and cultural capital. The last he saw as forms of knowledge, education, skills, or similar advantages that persons might have which gives them a higher status within society. As such, cultural capital helps explains why classes exist within societies and why they are essentially sustained. The capital element of the construct is applied because, as with other forms of capital, cultural capital may be accumulated, built, or diminished.

Types of Cultural Capital

Bourdieu (1986) identified three subtypes of cultural capital: embodied, objectified, and institutionalized:

Embodied. Cultural capital may be embodied within the individual, such as the inherited and acquired properties of one's self. Inherited cultural capital would be the cultural traditions from one's family and social class. This is acquired over time and is strongly linked to one's personal character and way of thinking.

Objectified. Cultural objects which are owned, such as artworks, may be transmitted symbolically as cultural capital as well as the more common transmission physically or by sale. Bourdieu claimed that while one can own objectified cultural capital through possession, those objects can only be utilized if people have the correct type of embodied cultural capital.

Institutionalized. Institutional recognition of cultural capital is mainly understood in relation to the labor market in the form of academic credentials or qualifications. Institutionalized cultural capital allows easier conversion to economic capital by assigning a monetary value for a certain institutional level of achievement.

Cultural Capital and Education

From an ideological perspective Bourdieu's thesis is that the role of education is mainly one of social reproduction that enables the dominant social class to reproduce its power, wealth, and privilege in a legitimate manner. Consequently, schools, as part of the political/ideological superstructure in capitalist society, help to perpetuate social and economic inequalities across the generations.

Using cultural capital Bourdieu demonstrated how the working classes were systematically blamed for their relative failure within the education system. He argued that access to resources and information as found in schools is a form of cultural capital restricting the working classes. If an equal opportunity to schooling was available to all, then success or failure must be a consequence of the individual rather than the way in which the system is structured to favor one class over another.

Further, Bourdieu argued that children are not simply socialized into societal values as a whole, but rather, they are socialized into the culture that corresponds to their class. This becomes their set of values, beliefs, norms, attitudes, experiences, and so forth that equip people for their life in society and represents their cultural capital.

More recently in terms of education, cultural capital may theoretically explain differential student achievement utilizing a wide range of influences. The past two decades have witnessed an increasing emphasis upon formal, systemic assessment of student achievement in many countries. The outcomes of these assessments reveal, unsurprisingly, that students from disadvantaged backgrounds perform at lower levels than other students. Cultural capital can provide a theoretical framework for explaining this phenomenon by addressing questions of power and ideology which authors contend are central to the differential achievement debate. For example, in the context of differential student achievement the explanation is traditionally linked to individual ability and some school effects rather than by cultural resources reflecting family influences and in the process the transmission of privilege is legitimized and not perceived as handicapping the disadvantaged child. Social capital

refers to connections among individuals that facilitate collective action and has received wide, though equivocal, support. These resources include trust, norms, and networks of association representing any group which gathers consistently for a common purpose. In her study of cultural capital on English school students Sullivan (2001) found strong evidence that cultural capital was transmitted from parents to their children which helps explain differential performance.

Issues in Cultural Capital

Multiple problems have been identified in both the theoretical understanding and practical application of cultural capital to explain social phenomena. Foremost there are conceptual difficulties concerning how cultural capital is to be identified and measured given that most measures are proxies. For example, which cultural activities constitute cultural capital? If reading books and newspapers as well as television viewing habits are included as Sullivan (2001) suggests, what of music habits, both listening and playing or participation in sport?

Similarly, technical difficulties abound concerning how cultural capital can be applied practically to address sociological problems. Will reading more books, for example, enhance cultural capital? Or is some measure of quality in books important in contributing to an individual's stock of cultural capital?

The impact of cultural capital is valuable as an explanatory concept but is more problematic when considered as a major theory of cultural reproduction. As Sullivan found, when disaggregating the effects of cultural capital and social class on student attainment, cultural capital provided only a partial explanation of social class differences in the educational achievement of students. As with social capital, cultural capital appears more useful at first blush and both were initially welcomed by social scientists with acclaim. But subsequent exploration, both theoretically and empirically, has found both concepts wanting as broad based explanation of social phenomena.

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